

THE POWER INDUSTRY
AND
THE PUBLIC INTEREST

THE TWENTIETH CENTURY FUND

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THE POWER INDUSTRY AND THE
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THE POWER SURVEY OF THE TWENTIETH CENTURY FUND

Chapters 1 to 11 inclusive of this volume contain a brief summary of the factual findings of an extended survey of the electric power industry and its relation to government agencies made by a special research staff of the Fund. Chapter 12 contains a report and recommendations for action made by the Fund's Power Committee largely on the basis of these factual findings.

*THE POWER COMMITTEE**

J. HENRY SCATTERGOOD, *Chairman*

Director, Philadelphia Transportation Company and other companies;
formerly Member, Public Service Commission of Pennsylvania

JAMES C. BONBRIGHT

Professor of Finance, Columbia University; Trustee and Chairman,
New York State Power Authority

LARUE BROWN

Counsel to municipalities in rate cases and to the Massachusetts Public
Service Commission; formerly Assistant Attorney General
of the United States

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MURRAY D. LINCOLN

Executive Secretary, Ohio Farm Bureau Federation

PAUL A. SCHOELLKOPF

President, Niagara Falls Power Company; Chairman of the Board,
Niagara Hudson Power Corporation

THE POWER SURVEY RESEARCH STAFF

ARTHUR R. BURNS, *Research Director*

WALTER E. CAINE, *Associate Director*

WALTER H. BEIDATSCH

BLANCHE BERNSTEIN

MELVIN G. DE CHAZEAU

HUBERT F. HAVLIK

C. EMERY TROXEL

PATRICIA VAN DERAAS

WILLIAM VICKREY

and others

* Also originally on the Committee were: William L. Batt, President, SKF Industries, Inc., who resigned to join the staff of the War Production Board in February 1941; Charles O. Rose, Lawyer, and President, Cincinnati Bureau of Governmental Research, who died in June 1942.

THE POWER INDUSTRY AND THE PUBLIC INTEREST

*A Summary of the Results of a
Survey of the Relations Between the Government
and the Electric Power Industry*

THE FACTUAL FINDINGS

(EDWARD EYRE) HUNT, *Editor*

THE PROGRAM

By THE POWER COMMITTEE

New York

THE TWENTIETH CENTURY FUND

1944

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FOREWORD

ELECTRICITY IS THE CHIEF ACTIVATING FORCE of the modern industrial world. Its importance, both in our economic and social life, is beyond all measurement. And, because its currents reach into the intimate corners of our homes as well as into our factories and farms, few of us indeed are free of their effects. As electric power is an essential industry in winning the war so also will it be in the achievement of the kind of postwar world that can make our sacrifices worth their cost.

The degree to which electricity can serve the public interest in peace or war is largely dependent on the relation between the agencies which produce it and the government. For the government must, of necessity, be a leading character in the story — either as regulator or producer. No natural monopolies which attain such gigantic size and strength could be left free of drastic social controls. But whether government shall serve as regulator and producer, or as regulator only, and how these functions can best be performed, are leading items of unfinished business on the American postwar policy agenda.

Late in 1938 the Trustees of the Fund appointed a distinguished special Committee, under the chairmanship of J. Henry Scattergood, to take charge of a searching inquiry into these problems and to recommend to the American people constructive policies to meet them. A special research staff of the Fund, with Arthur R. Burns, Director, and Walter E. Caine, Associate Director, was set up early in 1939, to assemble and report to the Committee the essential facts bearing on the electric power industry in its relation to government agencies.

The factual findings — in an authoritative and comprehensive document of over 1,000 pages — were finally completed in 1943. Much of the material was prepared in 1941 and in consequence the text does not reflect some of the developments in the power situation since that date. In an attempt to cover the more important changes, however, Dr. James M. Herring made a fairly extensive revision of the material. Further editorial work was done by Anthony Netboy. The text as re-

vised therefore does not in all instances reflect the work and views of the research staff.

Unfortunately, because of paper limitations and a large increase in the number of other Fund titles this year, publication of the full report has had to be postponed. In its place, the present volume is being issued so that the public may have the conclusions and recommendations of the Power Committee — along with at least the high-spot facts — without further delay.

Chapters 1 to 11 inclusive are a condensation by Edward Eyre Hunt of the full text of the factual findings. For the workmanship of this summary Mr. Hunt is wholly responsible; for the facts the technical staff is entirely responsible. As Mr. Hunt says, any resemblance of the result to his own views is "purely coincidental." The members of the Committee made suggestions to the staff and to Mr. Hunt in their preparation of the factual findings but have assumed no personal responsibility for, or approval of, the material contained in the first eleven chapters.

Chapter 12 contains the full text of the Committee's conclusions and recommendations for action to meet the problems which the research findings have revealed. For this chapter the Committee itself is wholly responsible.

The Fund deeply regrets the necessity of postponing publication of the full report and appreciates the forbearance of the original authors in a difficult situation. For those who wish to go more deeply into the subject, or to check the sources of the facts in this volume, the Fund can only counsel patience until the complete text may finally appear.

In the meanwhile, the thanks of the Fund go in full measure to all those who have contributed to this survey — especially to Mr. Scattergood and the other members of the Committee who have generously contributed their time and energy to the undertaking. That persons of so divergent views and affiliations have been able to agree unanimously on policies that are the opposite of innocuous generalities is a tribute to the Committee and to the democratic way of life.

EVANS CLARK, *Executive Director*
The Twentieth Century Fund

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THE FACTUAL FINDINGS

Chapter 1

THE ELECTRIC POWER INDUSTRY

IN A LITTLE MORE THAN FIFTY YEARS the electric power industry has so transformed industrial, civic and domestic life that it is almost impossible for us to realize the changes that would follow if the flow of electricity should cease. By 1940, 84 per cent of the population of the United States lived in electrically lighted homes. Of the homes wired for electricity at the end of that year, 95 per cent had electric irons, 63 per cent refrigerators, 54 per cent clocks, 49 per cent vacuum cleaners and 35 per cent coffee percolators. Similarly, on the farm electricity lightens labor and improves living conditions.

The social implications of electricity, through the movies and radio, for example, are equally striking. The significance of better street lighting is brought home when we experience wartime "blackouts." The fire, police and other civic services are all greatly dependent on electric power. But above all it has radically transformed industrial processes and conditions of work. Factories no longer need to be located only where cheap fuel or water power is available. The Federal Power Commission in 1935 summed up the changes brought about by electricity as follows: "Modern civilization would collapse with the failure of the sources of electric light and power."

Size and Rapid Growth

The share of the national income originating in this industry increased from 0.5 per cent to almost 3 per cent between 1919 and 1932, and then fell off during the years of depression to 1.8 per cent in 1938. But even in that year the industry outranked such major groups as chemicals, communications, coal mining and paper as a source of income and employed some 248,000 wage and salaried employees. This

one industry accounted for over 13 per cent of all the net capital assets employed in American industry — more than half those of all manufacturing industries and exceeding those in any other group except railroads.

The industry has grown enormously in fifty years but most rapidly since 1918. From 1902 to 1940 the capacity of electric generators for public sale increased about thirty-five times, electric output about fifty-eight times and the revenues of the industry about twenty-nine times. By the end of 1941 it had a total installed generating capacity of 44.0 million kilowatts, a net increase of 5.7 per cent over the previous year. Power production for public use reached an all-time high of 168 million kilowatt-hours — about 29 per cent above the 1939 output. Of eight major countries in 1935, only Canada had a greater per capita generating capacity and output of electricity than the United States.

At the beginning of 1941, 70 per cent of the country's total generating capacity was derived from steam, 28.6 per cent from water power and 1.4 per cent from internal combustion engines. Although the relative importance of hydroelectric power has increased slightly since 1935, the unused water resources in that year would, if utilized, have increased the national output by nearly 150 per cent. The most heavily industrialized areas, the middle Atlantic and east north central regions, contain almost 47 per cent of the total generating capacity of the country (59 per cent of steam generating capacity; 19 per cent of hydro capacity).

The rapid expansion of the power industry, together with the fact that it uses a large amount of plant and equipment in relation to labor, has made it an important investment outlet since 1918. Nearly \$10 billion was invested in new construction in the period from 1921 to 1938, and by 1937 the net value of its capital assets was about \$13.3 billion.

Increased Efficiency in Power Facilities

Expansion has been aided by rapid and almost continuous technical improvements which have lowered both costs and prices. The cost of generating power has fallen almost continuously since 1900 but it has been more rapid for generation from fuel than from water power.

Coal consumption per kilowatt-hour in completely modern steam plants was only about 15 per cent as much in 1936 as in 1900. Capital investment, labor and materials for operation and maintenance have also fallen very greatly. But even now the most efficient steam plants convert only about 31 per cent of the heat in the fuel into electric power. Technically, efficiency in the use of steam depends on the difference between the initial temperature of the steam and the temperature of the condensing water. The greatest improvements have come from raising the temperature of steam through the use of better equipment. These improvements have increased the proportion of potential heat in the fuel converted into steam — from about 40 per cent in 1900 to 85 per cent at the present time.

While conventional steam units may be approaching the limits of their efficiency, other methods of generation seem to promise greater economy — such as Diesel engines, gas-propelled turbines and turbo-generators — and other sources of electrical energy may become increasingly important in the future. The possible use of uranium in tapping atomic energy is one of the most revolutionary of the proposed developments.

Even with no further technological improvements, efficiency could be improved by more widespread use of the best available methods, by replacing obsolescent plants with modern ones, and by further interconnection of present systems. Nearly 70 per cent of the nation's generating capacity in 1941 was over ten years old.

Falling water is extensively used in the United States to generate electricity. The turbines and equipment in use forty years ago converted about 85 per cent of the power in falling water into mechanical power. In 1920 efficiency reached about 93 per cent. This is close to the limit and little further improvement has been made. Since modern hydroelectric plants utilize almost all of the energy in falling water, further reductions in cost must come mainly from cheaper methods of construction and lower interest rates.

Water versus Steam Generation

The relative advantage of water and steam plants has changed from time to time. In steam plants the fuel consumed per kilowatt-hour de-

clined 60 per cent between 1920 and 1938. On the other hand, technical developments in hydroelectric installations have made it possible to construct higher dams and to reduce costs with a saving of materials and labor. Nevertheless, the cost of steam generation has declined more rapidly. One authority has estimated the total cost of generation under ordinary conditions at 4 mills in a steam plant and 6.3 mills in a hydroelectric plant.

The relative cost of steam and water power is also affected by the load factor. A hydro plant carries peak loads more cheaply than a steam plant because additional generating capacity at the hydro plant costs less than half as much as additional steam capacity, and its costs of operation are almost independent of variations in load. An economical system takes advantage of both water and steam generation. For instance, where the flow of water is very steady the hydro plant may operate at a fairly constant rate and the steam plant be utilized for the peak load.

While the costs of hydro generation are chiefly capital costs, steam generation involves much less investment but higher fuel and labor costs. The construction of large steam generating plants (including land, building and machinery) costs from \$75 to \$150 per kilowatt capacity compared with more than \$150 per kilowatt capacity for hydroelectric plants. Falling interest rates or rising coal prices therefore favor hydroelectric operations.

A great disadvantage of water power is its fixed location and the consequent problem of transmitting power to large centers of consumption. In 1935 about two thirds of all the undeveloped water power was on the Pacific coast and one fifth in the northeastern and southeastern states.

Public agencies may have a different approach from private enterprise to the problem of developing power resources. The use of water power, for example, may yield public benefits beyond the revenues or costs of a private enterprise. Dams and reservoirs which regularize the flow of a river may benefit navigation, reduce flood dangers, check soil erosion and improve agricultural methods. Moreover, if the government can borrow at a lower rate of interest (an important factor in hydro plants), water power sites which might be rejected by private

companies may profitably be developed by public enterprise. Finally, the government, in calculating the cost of hydroelectric development, must consider the use of such construction to reduce the burden of unemployment relief in slack times.

Advances in generator design during the past forty years have increased available voltages from 2,300 to 13,000 but much higher voltages are necessary for long-distance transmission. Transformers have been devised to "step up" electricity to 165,000 volts or higher, and other transmission equipment has been designed to carry these loads. Alternating current is being used although experiments are being made to improve long-distance direct current transmission. The longest line in use transmits alternating current 300 miles at 287,000 volts. The technical limit is much higher but the cost is usually prohibitive. Power can also be carried longer distances by what is called "displacement" — each one of a series of plants can increase its imports of power from one side of its area and its exports on the other side.

Causes and Effects of Lower Rates

The average price of electricity (average revenue per kilowatt-hour) has fallen about 40 per cent — from 3.4 cents in 1902 to 2.1 cents in 1937. This average is somewhat misleading because the prices to different classes of consumers have decreased at different rates. For instance, in the same thirty-five-year period the average price to residential consumers fell from 16.2 cents to 4.3 cents. The decrease for large commercial consumers buying at retail is much less striking. Between 1912 and 1932 the average rate fell from 4.7 cents per kilowatt-hour to 4.1 cents.

Since the depression beginning in 1929 residential users have consumed an increasing share of the total kilowatt-hours sold. In 1926 they purchased 12 per cent and in 1938, 19.7 per cent. Farm consumers meanwhile increased their share from 1.3 per cent to 2.7 per cent. In contrast, consumption for industrial use declined from 57 per cent to 47.8 per cent.

In terms of total revenue to the utilities, residential consumers provided 30.9 per cent in 1926 and 35.9 per cent in 1938. The revenue from industrial purchasers during the same period was fairly constant

— about 25 per cent of the total return to the utilities.

The decline in the cost of electricity to residential users has continued in recent years, falling 12 per cent, 9 per cent and 10 per cent for various types of bills between 1936 and 1941. The increase in residential consumption has been due in part to lower prices but also to reduced costs of appliances and increased urban population.

Failure of the utilities to reduce prices still more has raised a controversy. Some charge it to the weakness of public rate regulation. Others hold that utility management should have reduced rates in order to increase sales rather than wait for an increase in sales before reducing rates. The competitive effect of rate reductions by public authorities such as the Tennessee Valley Authority has been pointed out as evidence.

It is a fact that lower average rates per kilowatt-hour generally occur where consumption per customer is high. This correlation is partly due to the fact that almost all electric systems offer reduced rates, usually in blocks, as consumption increases. But the response to a given rate reduction depends partly on income distribution in the area, which is not uniform in all parts of the country. Nor would consumption always respond sufficiently to offset the effect of lower average rates on revenues. Nevertheless, differences in consumption are large enough to suggest considerable elasticity of demand within the range of prices being charged.

Efforts of private utilities to increase residential consumption have been hampered by elements beyond their control, such as the cost of household electrical equipment and the opposition of independent dealers to their attempts to merchandise these appliances directly to consumers. The cost of serving farmers has been high and farm service has developed much more slowly than urban service. In 1938 only 22 per cent of occupied farms were supplied with outside current. In so far as the demands of farmers cannot be met by private enterprise, rural electrification is held by many to be a problem of national policy.

As for industrial service, the price of power varies considerably with the location and size of manufacturing plants and the bargaining power of the owners. The use of electricity in manufacturing has grown from providing 5 per cent of the physical energy used in 1899 to more than

80 per cent thirty years later. Horsepower per hundred wage earners rose in the same period from 11 to 398. Nearly 40 per cent of the electricity used in industry is not bought but is generated by manufacturers for their own use. The fact that large industrial users can supply their own power needs if the necessity arises helps to strengthen their bargaining position. The lowest average prices are usually obtained by the largest industrial consumers, such as the chemical, petroleum, paper and nonferrous metal industries.

The Increasing Tax Burden

The price of electric power has fallen in spite of a continuous increase in taxes. Between 1902 and 1937 the proportion of operating revenues paid out in taxes increased about 306 per cent and the proportion of net income (before taxes) paid out in taxes 188 per cent. The electric power industry pays a higher percentage of gross revenue in total taxes than any other industrial group except petroleum refining, tobacco products, alcoholic beverages and communications, all of which, except communications, pay special federal excise taxes.

No other industry pays out so large a proportion of its gross income in federal income taxes and miscellaneous federal taxes. The Revenue Act of 1932 imposed a tax of 3 per cent on sales of electric power for domestic and commercial use but not industrial use. In July 1940 this tax was increased to 3.3 per cent. The industry also pays a higher percentage of its gross revenue to state and local authorities than any other industry except petroleum refining.

These high taxes are largely passed on to consumers. In setting rates regulatory authorities apparently allow most taxes, including federal income taxes, to be included as an operating expense. The New York Public Service Commission, however, does not permit taxes on undivided profits, excess dividends or the value of capital stock to be passed on to the public.

The effects of heavy tax burdens on the electric power industry should be kept in mind in view of the persistent pressure to reduce rates, particularly domestic and rural rates. Reductions can be made without sacrificing profits only if consumption is proportionately increased. But higher taxes result in increased costs and limit the capacity

of utilities further to lower rates. There is a fundamental conflict between public policies which demand, on the one hand, higher taxes, and on the other, lower rates.

Costs in the Power Industry

Costs are of three types: (1) readiness-to-serve costs which depend upon the maximum expected demand, (2) output or commodity costs which vary with consumption and (3) customer costs which vary with the number served. The first and third, grouped together as capacity costs (or overhead), are the largest part of all costs. Capacity costs are about two thirds of all generating costs in steam plants, while in hydroelectric plants the proportion is much higher.

The cost of producing a particular unit of electricity cannot be calculated because it depends upon the availability of unused capacity. Once capacity costs have been incurred the cost of generation consists only of output costs. Since electricity cannot be stored in any quantity there must be sufficient capacity to carry the largest load to be anticipated at any time. But loads fluctuate widely and the full capacity is rarely used.

Average over-all costs of production per kilowatt-hour depend in part on the ratio between average output and capacity, or plant factor. The average output of all electric plants in 1938 was only about 35 per cent of total capacity — 47.3 per cent for hydroelectric plants and 30.1 per cent for fuel-using plants. Since some reserve is always necessary, the "load factor" (ratio of average output to maximum output over any short period — usually 15 or 30 minutes) is a better measure than plant factor of the utilization of plant capacity. The utilities are anxious, therefore, to increase the plant and load factors in order to reduce capacity costs per unit of output.

Apart from any changes in the plant factor, average costs per kilowatt-hour are apt to fall when sales increase. As the scale of operation increases, the system may be able to use larger and more economical generating plants, or additional plants may be built nearer to load centers to reduce transmission costs, or unit costs of management and construction may fall.

The costs of steam and hydro plants depend on somewhat different

factors. The capacity of a steam plant fixes its maximum continuous output while water flow as well as generator capacity determine that of a hydro plant. Although seasonal variations in water flow may be reduced by storage dams, annual fluctuations are usually beyond control. Estimates of the cost of generation from water power are therefore complex, particularly at projects which serve other purposes, such as irrigation, navigation or flood control.

Local Monopoly and Size of Systems

Local monopoly in this industry is recognized as more economical than competition. There is competition, of course, but, although it is important, it is usually indirect. Systems which border a common market area may compete directly or they may compete to attract customers, especially such important power-using industries as the electro-metalurgical group. Utilities may also be influenced by potential or actual competition from large users of power. Larger consumers may find it more economical to generate their own power if the utilities will not consent to low rates. Electricity must also compete with other sources of heat and energy. Domestic consumers, for instance, may substitute other fuels for heating and cooking.

Utilities are further exposed to a public pressure resembling competition from a comparison of their rates with those charged in other places. Rate reductions by one system tend to press down the rates of others. For example, public service commissions may exert pressure for the reduction of rates which appear to be "out of line," or rates of municipal plants sometimes press down the rates of nearby private companies. The "yardstick" use of the Tennessee Valley Authority rates and the publication by the Federal Power Commission of bills for typical amounts of electricity in various parts of the country have also stimulated rate comparisons.

As early as 1914 eighty-five electric utility corporations — mainly large local operating and management companies — controlled 69 per cent of the total installed generating capacity in the industry. By 1924 holding companies controlled about 63 per cent of the total energy generated by private electric utilities. Five years later they controlled 82 per cent. Holding companies also grew in size. In 1924 the seven larg-

est controlled 42 per cent of the electricity generated and by 1929 three groups alone controlled 45 per cent. After that date some of the larger systems, among them the Insull group, broke up, so that by 1935 the twelve largest systems controlled 50 per cent of the electricity generated as compared with about 76 per cent in 1929.

Technical progress, particularly in developing larger plants and better interconnections, is one of the reasons for the growth of large systems and increased output. The number of "establishments" increased 33 per cent between 1902 and 1922 but fell over 50 per cent between 1922 and 1937. Yet during this thirty-five-year period the output per establishment increased 9,875 per cent. By 1941 more than 43 per cent of electric generating capacity was concentrated in plants of 100,000 kilowatts or more and more than 35 per cent in plants from 25,000 to 100,000 kilowatts. But while over half of the steam capacity is in plants of more than 100,000 kilowatts, only about a quarter of the hydro capacity is in plants of this size.

Since large-scale generating facilities are likely to require enlarged market areas, such installations are economical only if the increase in transmission costs is less than the reduction in generating costs. Improvement in methods of transmission has facilitated the use of larger plants and encouraged long-distance interconnection.

Wholly or partly unassociated private utilities may, and occasionally do, jointly own and operate generating plants. Generating plants may also sell to separately-owned transmitting and distributing systems, just as manufacturers produce and sell at wholesale. Federal hydroelectric projects usually sell their power to small local distributing systems, such as municipalities, public utility districts and cooperatives. The private utilities have not relied on wholesale distribution to other systems. Rather, they have tried to achieve unified corporate control over large market areas by bringing them under single or associated distributing systems.

Rise of the Holding Company

Holding companies were first developed in the industry by electrical machinery manufacturers to enable small utilities to finance new equipment. They have since been used to build up large systems under single

control to obtain the economies of large-scale operation and management and also the profits from building and subsequently servicing the larger organizations. Most of the capital for the early holding companies was raised from operating company bonds. Later they issued their own bonds and preferred and common shares against operating company common stocks.

The holding company proved to be an efficient device for achieving the savings of large-scale operation. It provided promotion profits to investment bankers who floated holding company securities. It also permitted unified control without check by state commissions, and could be used as a means of diverting the benefits of centralized management from stockholders and consumers to the few in control.

In recent years the power industry has obtained more of its capital from bond issues than most industries. As one holding company has been pyramided upon another, the investment required for control has also decreased in relation to the total investment in the underlying properties. For example, in one group of thirteen top holding companies five large systems were controlled in 1931 through common stock whose nominal value was less than one per cent of the system's assets. In this kind of financial arrangement the common stockholder receives all returns above those necessary to pay fixed charges on bonds and preferred stock. He is, however, the first to suffer when revenues decline; but owners of holding company bonds and preferred stock also have relatively little protection from shrinkage of income.

Price in Relation to Demand

Within limits demand is predictable even though the buyer has only to throw a switch in order to increase the load on the system. Sales may be made conditionally upon power being taken at stated times in the day or year, or the timing of demand may be controlled by adjustments in price, such as low inducement rates during periods when capacity is not being utilized. Demand fluctuates during the day, week, month, year and over longer periods, with the daily peak load usually occurring in the early evening. Virtually no systems operate steadily throughout the day although some plants within a system may operate continuously at full capacity.

In view of the complicated production and distribution problems set up by this fluctuating demand, different scales of charges have been devised for residential, commercial and industrial customers. Residential rates are normally higher than industrial, chiefly because of higher distribution costs. Lower rates to industrial users are often justified on a cost basis. Such users may purchase substantial amounts at off-peak periods and they often are nearer the generating plant. Also, the unit cost of supplying them is usually smaller because they have greater consumption.

State regulatory commissions have often assumed that large consumers and the utilities could arrive at reasonable industrial rates without their aid. But as total revenues must provide a fair return on a fair investment value, the revenue obtained from large purchasers affects the amount that domestic consumers must pay. Whether the differences in rates to different classes are economically justified remains, therefore, a troublesome question.

Rates frequently vary with the distance of customers from the generating plant — rural rates are often higher than urban rates mainly because line costs per customer are higher. But it is doubtful if rates should vary at all closely with transmission distance since the costs of transmission and distribution, like those of generation, are chiefly overhead expense. Differences in the unit cost of service due to distance are probably a small part of the total delivered cost. The Power Authority of New York, for example, in its 1934 report on costs of distribution of electricity, concluded that "a single residential rate schedule for the entire State, including farm service, will eventually be found economically practicable."

In recent years private systems and federal projects have tended to set up uniform rate areas. But even where electricity is delivered to a single class of customer within a small area, the method of pricing is complex. Industrial and commercial customers for years have paid a "demand charge" independent of the kilowatt-hours used, depending on the maximum load used by the customer during the billing period. Rates to residential and sometimes to small commercial customers may also include a fixed charge based on an estimate of fixed charges on the investment in the meter, plus the cost of meter reading, billing and

similar expenses not related to consumption. Schedules have been simplified in the past few years, largely to avoid the ill-will of customers who do not understand the complicated method of charging and doubt the fairness of the rate.

Special considerations affect the pricing of hydroelectric power. "Firm" or "prime" power, for instance, is available continuously, while additional power is available only when the water supply is above the minimum. This "secondary" or "interruptible" power is usually sold at a lower price since the buyer must maintain a supplementary source of power or adapt his operations to a varying source of supply.

Chapter 2

RATE REGULATION: AGENCIES AND PROBLEMS

GOVERNMENT HAS INTERVENED in the electric power industry because the monopolistic character of the industry places it under no pressure to charge prices covering only competitive costs and reasonable profits. The first efforts at regulation were local in scope. Maximum charges set by local statute or ordinance produced rigid, spasmodic and inept, if not corrupt, regulation. Control through conditions attached to monopolistic franchises was also inflexible, difficult to enforce and sometimes corrupt. In any event the jurisdiction of municipalities was too restricted, and a demand arose by 1900 for scientific regulation by administrators armed with authority to determine facts and issue rules and orders. Wisconsin and New York were the first states to establish, in 1907, modern administrative commissions with control over electric utilities. Since then thirty-eight additional states and the District of Columbia have followed their example.

The Need for Regulation

Progress in engineering and business organization as well as conflicting court decisions have complicated the task of regulation. The financial practices of many utility systems during the period of reorganization and concentration of control were widely censured and the industry was charged with nullifying state regulation. An opportunity was provided for uncontrolled exploitation and when the industrial machine began to break down in 1929, it became evident that many utility companies had taken full advantage of the situation. The collapse of holding company stocks was interpreted as evidence of exploitation. The industry thus became a symbol of the real or imagined sins of the business world. The public was in no mood for a just and

careful allocation of praise and blame. It demanded action.

Many states increased the statutory powers, and even the financial resources, of their public service commissions. Commissions sought to improve their procedures and personnel. The federal government supplemented the states' activities by empowering the Federal Power Commission in 1935 to regulate interstate wholesale rates for electricity. In the same year the Securities and Exchange Commission was authorized to deal with the top-heavy financial structure of many electric systems and the concentration of control by holding companies — matters for the most part outside the jurisdiction of the states.

Because of widespread doubt whether regulation alone could bring private systems into harmony with public interests, the movement for public operation of electric plants gained momentum. Franklin D. Roosevelt, when a candidate for the presidency in 1932, advocated some public operation as a "birch rod" to control the private systems. In 1940 the Chairman of the Federal Power Commission stated that "the development of government power policy since 1933 may be traced directly to the failure of state regulation to find any way of establishing and enforcing sound cost and sales standards in the business of supplying the country's power requirements."

But there were other reasons for increased public power operations. The government could utilize great water power resources and often at the same time control floods, improve navigation, facilitate national defense and recovery from the depression. Publicly-financed rural electric service was also advanced as a means of improving the standard of living of the farmers. Complaints that the power industry was being victimized were swept aside with the retort that the national interest was supreme. Publicly-operated systems of various types developed rapidly. Yet 90 per cent of the power produced in 1939 still came from private plants.

The object of utility regulation is to assure to ultimate consumers the best possible service at reasonable cost. Adequate service of acceptable standards must be furnished and the charges for service must be reasonable. Regulation is generally held to act as a substitute for competition.

The cost of providing power depends upon the generating, transmit-

ting and distributing capacity of a system. Once capacity has been provided, small increases in output involve little increase in costs until the plant is used at full capacity. But prices covering the cost of added output may fail at times to cover all the costs, including depreciation of property and a return on capital. This is not fatal in unregulated industries, many of which suffer losses in some years. But in the power industry rate adjustments are difficult to make because consumers used to the initial lower rates will resist increases later, and because industrial users, in particular, have sought some assurance as to the cost of power before locating their plants.

The supply of power by private enterprise can be expected to continue only if electric utilities are allowed to charge rates that yield a sufficient return to attract capital. Stated in this simple form the policy of regulation rests on a "cost plus" principle. This policy may be modified to require a "fair return" only to an efficient and progressive organization. But when regulators inquire whether all the operating expenses on the books would have been incurred under efficient and progressive operation, the companies may complain that the prerogatives of management are being invaded.

The greatest difficulty in setting rates to cover costs arises from the fact that investments are made for long periods while rates are set for short ones. Investors in utilities expect not only a return of their capital intact but also compensation for the temporary surrender of purchasing power and the risk of loss. This compensation must at least be sufficient to induce them to supply the capital required by the industry. Courts and administrators have often stated that the return must equal that of other industries involving comparable risks. But the risks of regulated industries differ from those of unregulated industries. The industries involving similar risks are likely, therefore, to be other regulated industries.

Calculation of the Rate Base

Investors are directly concerned with the method of calculating the sum (or "rate base") on which the utility is allowed a fair return. This may be arrived at by calculating the cost of reproducing the property.

But a policy of granting to utilities a fair return on the replacement cost of existing properties treats investors in most respects better than they are treated under competition. They are relieved of losses due to improvements in production methods, and benefit more quickly from increases in the cost of equipment than under competition.

Whenever the reproduction cost of property is calculated, allowance must be made for depreciation. This can be only roughly estimated. Yet, since it so vitally affects the rates, it has become a focus of wide controversy. For example, companies sometimes claim large annual allowances on the ground of rapid depreciation but, in discussing the rate base for the same property, claim that it is very little depreciated.

Another difficulty in using reproduction cost as a rate base is the laborious and expensive calculations involved. Also, as many elements in a plant become obsolete they cease to have a current market price, and one can only guess what they would have cost had they not been superseded.

These difficulties can be avoided by using the original cost of the property as a rate base, with allowances for imprudent or dishonest expenditures, and for additions, retirements and accumulated depreciation reserves. Annual depreciation charges need bear no direct relation to annual changes in the value of the property since simple arbitrary formulas may be used for distributing depreciation charges over the life of each asset.

In practice regulation necessitates the setting of a number of rates under a variety of conditions. Residential, commercial and industrial service, as we have seen on page 8, all involve special costs, and the demand for each responds in its own way to rate changes. Criteria of proper differentials between services must be established by the regulator if regulation is not to be unreasonably arbitrary, and allowance must be made for differences in the cost of service under varying conditions and in the growth of demand in response to reductions in different rates.

If the electrical industry is to continue to be self-supporting, regulation must also be consistent. A fair division must be made of the risks to be thrown on investors and consumers, respectively. The rate of re-

turn must be no larger than is necessary to induce investors to take the risks they are asked to bear. Operating costs must also be scrutinized to be sure they are no greater than necessary, and management must consider not only the necessity of husbanding its resources but the possibilities of cutting average costs by lowering rates.

Modern regulation of public utility rates and service is essentially an exercise of legislative power. Legislation has provided for regulating agencies and laid down general policies for their operation; but the courts have largely decided how these policies may be applied. To get a clear picture of regulation both the laws and the decisions must be known.

Legislative Origins

The present system of rate and service regulation began in 1907 when Governor Charles E. Hughes of New York and Governor Robert M. La Follette of Wisconsin obtained legislation under which public utility commissions were set up. By 1922 regulatory commissions had been established in the District of Columbia and all the states except Delaware, though not all of them had authority over electric utilities. About 1929 a new wave of state legislation began to enlarge the jurisdiction of commissions. The crest of this wave has now passed and in the last two or three years changes have been few.

In 1941 commissions in forty states and the District of Columbia had been given some jurisdiction over the rates and service of private electric utilities. In twenty-four states they also had power over some aspects of rates and service of municipally-owned utilities. But in Ohio, New Mexico and Kansas the legislature has conferred upon some or all municipalities exclusive or original power over rates applicable within their boundaries. In Colorado the courts have held that the rate-making power of the commission is inferior to that of municipalities with home rule charters.

The laws of some states such as Wisconsin, New York, California and Illinois provide for strong regulatory action; others are much weaker. Commissions are always given authority to make investigations, examine records and properties, question officials and secure pertinent data from various sources.

State Control of Rates and Service

Aside from occasional references to "the law of the land," or a citation of elements already mentioned by the courts, or a specification of items to be excluded from the rate base, statutes give little guidance in fixing a fair rate base. Statutory guidance to fix the rate of return is usually limited to the requirement that it be "fair" and "reasonable," without further mention of the factors to be considered.

However, in order to speed rate reductions by use of temporary rate orders, several states in the last ten years have specified the basis of rate adjustments. In New York, Pennsylvania and North Dakota commissions may fix temporary rates yielding a return of not less than a specified amount upon the original cost of the physical property, less accrued depreciation.

Control over actual rates and rate changes, as authorized by the Wisconsin legislation, requires utilities to file with the commission schedules showing their rates and charges for services performed within the state, together with all rules and regulations relating to them. Changes in rate schedules cannot be made except upon ten days' notice to the commission; increases may not take effect without written approval of the commission, after investigation and hearing; and rate discrimination is forbidden. All commissions have similar powers over rates, although they may be limited in respect to some classes of customers, and most of them can initiate proceedings in rate cases. Thirty-three have authority to permit the adoption of profit-sharing or sliding-scale agreements; twenty-three are allowed to fix temporary rates pending ultimate determination, where complete proceedings will require considerable time.

Commissions may investigate service. If they find that it is inadequate or unreasonably lacking, they may require that it be made reasonable and adequate. They may also set up service standards. General control over the establishment, extension or abandonment of service is usually vested in the commissions.

All commissions, except those in Massachusetts, New York and Utah, have the power to prescribe the method of computing depreciation, and all but Massachusetts can prescribe the depreciation rates used in accounts. All commissions also have power to order a uniform sys-

tem of accounts, designate records to be kept and prescribe annual and other report forms. They have expressed or implied power to examine accounts, books and records. Only New Jersey, Oregon and Washington require advance submission of budgets, but seventeen commissions have some budgeting control over expenditures for specific purposes.

Finances and Personnel of State Commissions

The chief sources of funds for the operation of commissions are: direct appropriations by legislatures from general tax funds; fees collected by the commissions themselves for filing papers in proceedings, testing of meters, issuance of certificates, etc.; and direct assessments of the costs of regulation against the regulated companies. Legislative appropriations were the main source of commission funds before 1929. Since then the practice of assessing public utilities with the costs of regulation has greatly increased.

It is almost impossible to determine if the resources of the commissions are adequate. According to the proceedings of the Committee on Progress in Public Utility Regulation of the National Association of Railroad and Utility Commissioners, commission financing in many states seems so inadequate as to cause neglect of long-run problems and of specific statutory responsibilities and duties.

State commissions usually consist of three members. In the last quarter of a century the tendency has been towards appointment rather than election of members. They are now appointed in twenty-seven states and the District of Columbia and elected in nineteen. Qualifications or disqualifications for membership vary greatly. Legal and engineering experience are the usual requirements when any are established. Terms of office range from two to ten years. In thirty-nine states terms are either four or six years. In most cases the terms are staggered. Salaries of commissioners in 1935 varied from \$1,600 (Vermont) to \$12,000 (New York and New Jersey), with an average of \$5,080 per year.

Enforcement of State Commission Orders

Statutes generally provide that commissions shall issue orders only after formal hearings in which the interested parties shall have full

opportunity to be heard. Such orders have the force of law and take effect within a specified period. Usually a utility which objects to an order seeks review instead of waiting for enforcement procedure. Statutes commonly authorize the courts to review commission orders upon appeal of interested parties, or the courts can assume jurisdiction by the use of writs in common law and equity. Statutes generally declare the findings of a commission to be prima facie evidence of the facts but judicial discretion as to the evidence to be considered is fairly broad.

Violations of commission orders (or of the provisions of the utility law) are subject to specified fines and penalties. With few exceptions these penalties are enforced only by the courts, upon suit by the commission or by the attorney general of the state at the commission's request. Four commissions — California, Oklahoma, Louisiana and Virginia — have some direct power of enforcement, and two of these are clothed with judicial powers to levy fines for violations and punish for contempt.

The Federal Power Commission

The entry of the federal government into the field of regulation of electric utilities rests upon its constitutional responsibilities for public lands and interstate commerce. Until 1896 water power sites on public lands were acquired by private interests under the pre-emption and homestead laws; between 1896 and 1920 various cabinet officers licensed their use. Grants on navigable streams required a special act of Congress until 1920.

The movement for the conservation of natural resources led to the passage of the Federal Water Power Act of 1920. This Act set up the Federal Power Commission consisting of the Secretaries of Agriculture, Interior and War. It was given power to license the use of public lands and water resources within the federal jurisdiction. In 1930 the powers of the Commission were transferred by statute from these cabinet officers to an independent commission with five full-time members appointed by the President.

In 1935 the Public Utility Act extended the authority of the Commission to the regulation of the sale of electricity transmitted for resale

in interstate commerce. Finally, in two recent statutes the Commission has been authorized to regulate the rates charged for power generated on federal projects at Bonneville and Fort Peck.

The Federal Power Commission is empowered to issue licenses to construct and maintain dams and other works for the improvement of navigation and "for the development, transmission, and utilization of power across, along, from or in any of the streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce . . . or upon any part of the public lands and reservations of the United States . . . or for the purpose of utilizing the surplus of water or water power from any government dam." These licenses are contracts which are irrevocable except for breach of their conditions.

Congress has specified the policy to be followed by the Commission in deciding whether to grant a license. Licenses may be issued for a period not exceeding fifty years. Preference must be given to states and municipalities over private agencies. After the expiration of a license and after not less than two years' notice, the United States may take over any project covered by the license, in whole or in part. Payment must cover "the net investment of the licensee in the project or projects taken, not to exceed the fair value of the property taken," plus a reasonable sum for damage to the property not taken, due to the severance. Any public body may also take over the property at any time by condemnation upon payment of just compensation.

Licensees are subject to four important regulations prescribed by Congress:

1. After the first twenty years of operation, they must establish an amortization reserve out of any surplus accumulated "in excess of a specified reasonable rate of return" on their actual legitimate investment.

2. They must pay the United States reasonable annual charges, to be fixed by the Federal Power Commission, to reimburse it for the cost of administering the act, to recompense it for the use of its property, and "for the expropriation to the Government of excessive profits until the respective States shall make provision for preventing excessive profits or for the expropriation thereof to themselves, or until the period of amortization . . . is reached." This clause operates only during the first twenty years

of the project, after which the amortization clause operates.

3. They must abide by such regulations, both as to quality of service and rates charged, as may be prescribed by the state in which the service is rendered or the rate charged. In states where no provision is made for regulation the Commission may regulate until state authority is exercised.

4. When any part of the power generated by the licensee enters into interstate or foreign commerce, the rate charged and the quality of service rendered "shall be reasonable, nondiscriminatory, and just to the customer."

The Federal Power Commission must, so far as possible, follow the procedures laid down for the regulation of steam railroads in the Interstate Commerce Act of 1887, as amended. The base for determining rates of licensees selling in interstate commerce appears, therefore, to be original cost or "fair value," whichever is the smaller, together with severance damages (which are irrelevant to rate regulation).

Federal Regulation of Rates and Service

Rates charged for current sold in interstate commerce for resale must be "just and reasonable." If the Commission finds that they are not, it may fix them by order. It may investigate the "actual legitimate cost of the property of every public utility, the depreciation therein, and, when found necessary for rate-making purposes, other facts which bear on the determination of such cost or depreciation, and the fair value of such property." Congress did not specify whether the rate base is to be the original cost of the property or its "fair value," nor specify the use to be made of information concerning original cost.

Quality of service is also subject to regulation by the Federal Power Commission. Public utilities may not discriminate in rendering service either as between localities or classes of service, nor may they make a change in service except after thirty days' notice. Upon complaint by a state commission, the Commission may determine "proper, adequate, or sufficient service" and "fix" such service by order, although it cannot compel the enlargement of generating facilities. The FPC is also given power to regulate security issues, mergers and interlocking directorates and managements.

Congress sought to avoid the charge that it was usurping state powers by declaring that federal regulation is to extend only "to those mat-

ters which are not subject to regulation by the states.”

Enforcement of the Federal Power Act is provided for by a number of sections. In judicial proceedings the Commission's findings of fact, “if supported by substantial evidence,” are conclusive. The Commission may prescribe forms of accounting and inspect the books of regulated companies and it has broad powers of investigation, both on its own initiative and on complaint, and of recommendation as to legislation.

The Commission's appropriations rose from \$170,200 in 1930 to \$2,280,500 in 1941. This large increase is partly due to the fact that the Commission's duties have been greatly increased since 1938 by the passage of the Natural Gas Act.

Authority of the Commission over rates of federally-operated projects is given in specific statutory provisions. Rates of the Tennessee Valley Authority are not regulated by the Federal Power Commission; those of the Bonneville and Fort Peck projects are. Rates charged for power sold by projects administered by the Bureau of Reclamation are not regulated by the Commission. Those of Boulder Canyon, for example, come under the jurisdiction of the Secretary of the Interior.

In the matter of service charges, the Securities and Exchange Commission was given power in 1935 to regulate the charges made by holding company affiliates to operating subsidiaries for engineering and management services, and the Federal Power Commission decided that, in its regulation of rates, it would permit the deduction of such service charges as an expense only to the extent that they were charged at cost. With some exceptions, contracts for service, sales and construction work by registered holding companies for their associated companies are now prohibited, except when made at cost through separate subsidiaries.

Delimiting Federal and State Powers

The courts have played a major role in determining the respective regulative jurisdictions of federal and state governments as well as the extent of regulation permissible to federal and state agencies.

Direct regulation by the federal government must be based on powers delegated to it by the Constitution. Indirect regulation, through the

exercise of the taxing power or the war power, is of course another matter. The federal government's power to regulate interstate commerce may be exclusive or concurrent with state powers. Although both federal and state governments may regulate certain activities, the Supreme Court has in the past interpreted the Constitution so as to create "twilight zones" in which no adequate regulation by either government has seemed possible. In specific cases the Court has prohibited federal regulation on the ground that the subject matter is reserved to the states, but the states have been unable to exercise their power because the subject matter demands uniform laws and enforcement throughout the nation.

States have been forbidden to regulate if they would thereby place an unconstitutional burden on interstate commerce. Until quite recently the federal government has chosen not to regulate interstate rates for power sold at wholesale. For example, in *State of Missouri v. Kansas Natural Gas Co.* (265 U.S. 308, 1924), the Court interpreted the silence of Congress on this point to be "equivalent to a declaration that that particular commerce shall be free from regulation." Passage of the Public Utility Act in 1935 finally brought such commerce under the control of the Federal Power Commission.

Another "twilight zone" was created by the development of holding companies. Service companies subsidiary to the holding company, or the holding companies themselves, frequently performed management and advisory functions for operating companies at exorbitant fees; and these service or holding companies were often outside the jurisdiction of the states in which the operating companies sold electricity. Regulation was therefore difficult, if not impossible, until the federal government decided to exercise control in 1935.

The inevitable mingling of interstate electricity with electricity generated and sold within a single state has complicated federal jurisdiction. But recent cases suggest that the courts will sustain federal regulation over both where such jurisdiction is necessary to the continuance of federal control over interstate energy. The Federal Power Act indicates that Congress intended to supplement rather than to supplant state regulation but knotty problems remain as to what specific phases of regulation lie within the jurisdictions of the FPC and the states.

Federal Jurisdiction over Waters

Delimitation of authority has become especially important in connection with water power. Federal jurisdiction over navigable waters has been established ever since John Marshall declared that navigation was comprehended in the term "commerce" in the interstate commerce clause of the Constitution. In 1940 the Supreme Court broadened the meaning of "navigable waters" by including structures on tributary streams. In 1941 it held, in *United States v. Appalachian Electric Power Co.*, that Congress is liable to no one for the use or nonuse of water power inherent in flowing streams under its jurisdiction, and that Congress can therefore attach any conditions it wishes to the use of the water, even apart from navigation.

The implications of this important decision are far-reaching. They may be summarized as follows: (1) the plenary power of the federal government over commerce must develop with the needs of commerce and is as broad as those needs; (2) the constitutional power of the United States over its waters is not limited to control for navigation, but may extend to flood protection, watershed development, and recovery of the cost of improvements through the development of power; (3) a stream need not be navigable in fact where it may be made navigable by "reasonable" improvements; (4) the power of the federal government is dominant over the states with respect to the water power inherent in flowing streams; (5) the flow of a navigable stream is in no sense private property and exclusion of riparian owners from its benefits without compensation is entirely within the federal government's discretion; (6) the federal government has the power to condition a license for the construction of a hydroelectric plant in a navigable stream; and (7) since the United States itself might erect structures in navigable streams, even one equipped for the generation of electric energy, it may constitutionally acquire one already built.

Main Lines of Judicial Policy

The Supreme Court has assumed the final power to determine the extent to which the federal or state governments may regulate public utilities.

Appeals to the courts against regulation are usually based on the

Fifth and Fourteenth Amendments to the Constitution of the United States, or on similar provisions in state constitutions, relating to the protection of private property and "due process of law."

Delimitation of regulation has involved two problems which have not always been kept distinct: (1) the segregation of the types of business "affected with a public interest" and subject, on that account, to a greater degree of regulation than other business; and (2) the determination of the extent of regulation permissible under the Constitution.

At first the courts regarded state regulation as an exercise of the "police powers"; but subsequently the regulation of rates was considered an exercise of the power of "eminent domain," whereby the state may condemn property for a public use but only if the owner receives adequate compensation. It has also been argued that rate regulation merely enforces the pre-existing common law duty to charge reasonable rates. Alternatively, some contend that, since the property is actually taken at the time when it is first devoted to a public use, the owner should be compensated on the basis of original cost. But the Supreme Court has refused to accept original cost as the sole determinant of the rate base and has failed to support the theory that regulation is merely declaratory of the common law. Although supporting the eminent domain theory, the Court has not carried that theory to its logical conclusion, since it has upheld rate reductions.

In deciding whether rates are confiscatory and, hence, unconstitutional, the courts have been mainly concerned with the determination of the "fair value" of the property at the time of the proceeding, and the "fair rate of return" to be applied to this fair value. Although the "fair value" and "fair rate of return" have an equally important effect on the final result, courts, commissions and commentators have given much more attention to the former than to the latter.

"The Rule in Smyth v. Ames"

The traditional Supreme Court pronouncement on the proper determination of a rate base was made in 1898 in the case of *Smyth v. Ames*. This so-called "rule in *Smyth v. Ames*" is not in reality a rule at all but a long and complicated list of elements to be used, in proportions un-

specified by the Court, in compounding a rate base. And although the Supreme Court has somewhat narrowed the range of uncertainty since *Smyth v. Ames* it has retained ultimate control of policy without clearly defining it.

Courts have generally placed greater emphasis upon reproduction cost than any other basis of valuation mentioned in *Smyth v. Ames*, and in the past the Supreme Court has repeatedly declared that the reproduction cost relevant to rate regulation is the cost of reproducing the existing plant, however antiquated and inefficient it may be, and not a modern and efficient substitute. Following the lead of the Supreme Court, regulatory commissions generally have made little or no direct deduction for obsolescence.

By disregarding obsolescence the Court has avoided some difficult questions only to face others which are even more difficult and unreal. Is the old plant to be reproduced all at once, or piecemeal? How long a period is to be allowed for construction? To what extent are present conditions of construction to be assumed and to what extent the original conditions? Can modern methods and machinery be used even though the resulting structure will be different from the old? Some of the machinery involved may no longer be manufactured; how then is a price to be obtained?

Utilities have claimed that their property should be viewed as a "going concern," and that its value as such includes more than the cost of reproducing its constituent parts. The courts have often insisted on the necessity of some allowance for this going concern value in the rate base but have not indicated what it should be. In consequence the practice of commissions has varied. In some cases they have added crude percentages for going value to the cost of reproduction; in others, they have declared that each item of the physical plant has been valued as part of a going concern. The real objection to going value is that it constitutes, in essence, a capitalization of earnings under the rates in question.

The Supreme Court recognized early in its consideration of rate regulation that a utility with a partly worn-out plant was not entitled to a "fair return" on the cost of reproducing the plant in new condition but only on the "reproduction cost new," less the "depreciation" found in

the existing plant. The determination of the extent of this depreciation is another vexing problem. The rate at which depreciation will occur is admittedly speculative, and the courts have attempted to lay down no principles for determining the annual depreciation allowance, though the Supreme Court has insisted that the allowance should be "based" on the present value of the property and not on the original cost.

Limitations of Court Decisions

The long-time emphasis of the Supreme Court on reproduction cost in the calculation of the rate base is held by many critics to have undermined regulation. They urge that under modern conditions a more satisfactory rate base would be found in "original cost" or some similar concept such as "historical costs" or "prudent investment."

There is strong evidence that the Supreme Court may be ready, if the issues are again presented to it, to give more freedom to regulatory commissions. In 1938 the Court stated that where adequate opportunity for hearings and the presentation of evidence was afforded by the commission, the Court would uphold the commission, even though it did not follow the rules laid down by the Court, provided the order did not result in confiscation.

In its latest ruling on the rate base the Supreme Court unanimously upheld the Federal Power Commission's right to prescribe "interim" or temporary rates for a pipeline company pending an ultimate finding. "The Constitution," said the Court, "does not bind rate-making bodies to the service of any single formula or combination of formulas." If the minority concurring opinion may be considered as in any way indicative of the sentiment of the present Court, this statement may be interpreted as authorizing regulatory authorities to restrict their rate base findings to the original cost of the property adjusted for depreciation.

The courts have given little consideration to the principles to be used in calculating the permissible rate of return. The general trend of permissible rates of return was upward until about 1931 — from 4 per cent in 1909 (in addition to 2 per cent for depreciation) to 6 or 7 per cent in the 1920's. After 1931 the general decline in interest rates led the courts to accept somewhat lower rates of return, especially where

companies were obviously prospering. No general principles covering rates of return have yet been agreed on by the courts.

Powers of Administrative Agencies

In dealing with rate regulation the courts do not merely inquire whether there is substantial evidence to support the decisions of the regulatory bodies but have made independent judgments both as to the facts and the law. They have done so even where the legislatures have required that the state commissions' findings of fact are conclusive when based on substantial evidence. Moreover, federal courts have generally not been content to examine the record compiled by commission proceedings but have re-examined witnesses and compiled a new record of their own.

The Johnson Act of 1934 now prohibits the federal district courts from enjoining rate enforcement orders except when state courts do not afford an effective remedy. But in the three cases so far considered by the Supreme Court the federal district courts have been granted jurisdiction on the ground that the remedy in the state courts was not "plain, speedy and efficient." The Johnson Act does not deny to the utilities adequate judicial review, since the Supreme Court still retains appellate jurisdiction over the state courts.

Chapter 3

REGULATION IN PRACTICE

1. REGULATION BY MUNICIPALITIES¹

A CONSIDERABLE PART of the electric power industry is still subject to regulation by municipalities, chiefly by direct legislation or by contract. Municipalities may also establish administrative commissions with independent powers of regulation and attempt to effect regulation of rates by operating electric systems in competition with private companies. Furthermore, municipalities have authority, either expressed or implied, to grant franchises which give utilities a right to occupy streets and to attach to these franchises conditions as to rates, services and operations. They may fix rates by ordinance only if authorized to do so by the state, either expressly or by implication.

The exercise of municipal power to regulate requires skilled administrators and technical advisers. Even large cities rarely command such services and smaller municipalities usually depend upon their elected officials, the mayor and city council making final decisions. Public utility departments worthy of the name are few and are confined almost exclusively to large cities.

Few cities now use franchises exclusively to regulate rates. The older franchises usually specify exact or minimum rates, but in many instances reductions have been made by utility companies for commercial reasons or in order to bring about a speedy renewal of an expiring franchise. Newer franchises often reserve to the city the right to redetermine reasonable rates from time to time.

1. Letters from 110 sample communities and interviews with municipal officers and company officials in twelve cities, together with interviews with the officers of local leagues of municipalities in four states, are the sources for the information in this section.

The operation of franchise regulation is best shown by a few examples, such as the sliding-scale franchise in effect in Dallas, Texas. This is a long-term franchise providing for detailed and continuous regulation and a sliding-scale agreement. Changes in the lighting rate are governed by changes in the levels of three reserves: accident, depreciation and surplus. Relations between the Dallas Power and Light Company and the city have been quite peaceful under this arrangement.

Houston, Texas tried a profit-sharing agreement with the private utility in that area whereby all earnings over 8 per cent on a specified rate base were shared equally by the company and the city. This agreement was in effect with modifications from 1915 to 1941, when it was canceled by the city council.

Still another type of city regulation is by the use of short-term franchises, as in St. Paul and Minneapolis, where rates have been substantially reduced.

All cities in Ohio may fix electric rates by ordinance for periods of ten years or less. These rates are binding if accepted by the utility company but they may be appealed to the state commission either by the company or local citizens within sixty days. Cincinnati has been successful in regulating rates largely because its officials have supported a vigorous program of investigation and negotiation.

Franchises are in reality bilateral agreements between a municipality and a private concern which are formalized by ordinances. Ordinance rates, on the other hand, are legislative acts. They require no formal acceptance by the utilities whose only recourse — if they want to object — is to remedial legislation or judicial review. Most rate ordinances rest upon negotiations with the utilities, sometimes after appeal to the courts. Especially in smaller towns ordinances often do no more than ratify rates which have been proposed by the companies. But in some cities legislative regulation is of considerable importance, as in Miami, Florida. In the same state Tampa was unique in setting up an administrative commission in 1939 empowered to regulate electric and gas utilities. It is too early to appraise regulation by this board. Another type of indirect regulation of private rates is supplied by municipally-owned systems, either by comparison of rates or by direct competition.

Direct municipal competition looks more to replacement of private

enterprise than to its regulation. Municipal gas occasionally competes with private electric service, as in Jackson (Mississippi), Omaha and Duluth, and municipal competition has led to ordinance regulation of *minimum* rates of private competitors, as in the case of Seymour, Texas.

In general the regulation of rates charged by a substantial segment of the electric light and power industry is still lodged with municipal governments; but, left to their own devices and resources, the municipalities have given no evidence of an ability to engage in sustained and effective regulatory activity. A city undertaking a regulatory program is faced with all the problems which beset state commissions, along with the complications arising from the great size of many public utility service areas. Advocates of municipal regulation interviewed in this survey are often aware of its weaknesses but contend that state commission regulation is no better.

2. REGULATION BY STATE COMMISSIONS²

The ultimate obligation of state regulatory commissions is to insure public utility service at "reasonable" rates, which is usually interpreted to mean rates permitting only reasonable earnings. The reasonableness of earnings is conventionally judged by relating them to the property employed in the enterprise.

Since 1898, when the United States Supreme Court in *Smyth v. Ames* laid down a long list of elements to be considered in determining the fair value of the property of a regulated utility, the energies of commissions have been continuously sapped by efforts to find a workable basis for valuation. The Wisconsin commission has varied its treatment of the rate base in formal rate cases. Appraising one company's property in 1913, it used almost exclusively the cost of repro-

2. Most of the information in this section was obtained by interviews with state commissioners and members of their staffs, as well as the executives of electric utilities in several states. These include California, Massachusetts, New York and Wisconsin, chosen because their commissions are generally conceded to be the oldest, if not the best; Connecticut, New Jersey, Michigan and Oregon, chosen because they are close to one or another of the foregoing states; and Tennessee, a representative state in the South beset with interesting complications resulting from the Tennessee Valley Authority.

duction new, less depreciation. Six years later it derived its rate base by adding to the 1913 rate base the original cost of subsequent additions to the plant. In 1921 it denied an application for a further increase in rates which used the same type of rate base as the commission itself had previously used. The Wisconsin Supreme Court also shifted from "prudent investment theory" to "reproduction cost" in its decisions involving the same utility company. But since 1931 the Wisconsin commission has used estimated original cost almost exclusively in its informal negotiations with the utilities. In negotiated cases it has generally depreciated the rate base by deducting the depreciation reserve balance.

Rate Base Policies

The rate base policy of the commission of California strikingly resembles that of Wisconsin. As one commentator points out, "throughout a period of more than seventeen years the California Commission has been unanimous and consistent in its adherence to the prudent investment theory as being the only sound theoretical basis upon which a fair return can be prescribed." But the two commissions differ in their treatment of depreciation. California has favored sinking fund rather than straight-line depreciation accounting. This policy is now followed by most of the electric companies in that state.

Since 1930, the New York State commission reports it has estimated the cost of reproduction "only where it has been necessary to meet evidence introduced by the companies." But "book value . . . is by no means the only element considered in fixation of rates." In calculating reproduction cost no weight is given to materials and methods of construction which would not be used if the plant were being built at the time of the valuation. Nor is any allowance made for going value unless there is tangible proof of its existence. The straight-line method of determining depreciation has been favored.

The Oregon commission is said always to have "favored" original cost and to have considered cost of reproduction only when appeal to the courts was anticipated. All recent electric rate cases are said to have been based on book cost, less depreciation, because they have all been negotiated.

In formal rate cases the Connecticut commission determines "fair

value" from a consideration of the items listed in *Smyth v. Ames* including cost of reproduction, with no shifts in emphasis where court appeal is considered likely. In informal negotiations it restricts its consideration to undepreciated book cost.

Until 1937 the Tennessee commission considered all elements of value (including "going value" at roughly 10 per cent) in fixing the rate base, with the depreciated result usually close to the undepreciated book cost. Since 1937 it has given greatest weight to the actual investment less the depreciation reserve, but has limited the reserve to a figure between 3 and 6 per cent of the plant account.

Disagreement with Smyth v. Ames

The Michigan commission is said to have followed the rule of *Smyth v. Ames* consistently, except that it gave no consideration to the value of outstanding securities. In 1935, however, in a telephone case the chairman stated that "only compelling necessity should be accepted as a justification for departure from the prudent investment measure."

The Massachusetts commission has always followed the theory that rate levels should be related to the "amount of capital honestly and prudently invested by the stockholders, rather than by the value of the property employed." By employing as its base outstanding securities rather than property investment, it has been able to avoid many of the problems occasioned by *Smyth v. Ames*.

If the foregoing commissions are representative, a large majority of them have sought, either in practice or on principle, to circumvent that portion of the rule of *Smyth v. Ames* which requires that the cost of reproduction be reflected in the rate base. But this has meant resort to informal negotiations of rates. Reference to the cost of reproduction has had to be a conventional feature of formal proceedings, particularly where court review is expected. This policy, when joined with the growing tendency to deduct from the rate base more than the depreciation which is evident from inspection of the property, shows an increasing resistance to the basic court decisions relating to regulation.

The fair rate of return on a utility's rate base must be very narrowly defined because slight differences in the rate mean large differences in return. But commissions rarely indicate the real basis of their decisions

and the states included in this survey are no exceptions to the rule. In general they allowed returns varying from 7 to 8 per cent up to 1930, and 6 per cent in subsequent years. The frequency with which they hit upon these round numbers is striking. They seem likely to continue to discuss scientific considerations in their opinions but to base their findings on the latest court pronouncements in their own and other jurisdictions.

Utility Expenditures

Excessive or needless operating expenses or plant investment injure both the customers and stockholders of private utilities. As of January 1, 1941 commissions in sixteen states and the District of Columbia had statutory powers over utility expenditures for specific purposes, but only New Jersey, Washington and Oregon have required utilities to file budgets in advance of expenditures.

Investment in plant and facilities largely determines the cost of generation (except for changes in the price of fuel) and transmission. The only way to regulate them, therefore, is to regulate the nature and size of the investment in plant before it is made. But distribution, commercial and general expenses cannot, except for a few items, be readily regulated by direct action. The Wisconsin commission has attempted to solve this difficult problem indirectly by disseminating information on unit expenses and through informal discussions with utility officials.

Service contracts with affiliated interests can be more easily regulated in advance. Opinions vary regarding the necessity of state control of these contracts, since the Securities Exchange Commission is empowered to regulate them.

Regulating Capital Additions

Commissions can control expenditures for capital additions more successfully than operating expenses — especially if their statutory authority is adequate. This control rests largely on the regulation of security issues. But such issues cannot safely be made the sole basis of control because much utility plant construction is financed out of earnings, depreciation accruals and short-term borrowing before any securities are issued. Control of securities not only has a direct effect on the rate

base but saves money for the security holder. Of the commissions visited, Wisconsin most closely controls property additions.

Regulation of Rates

A reasonable return is no proof of reasonable rates. For example, costs may be excessive, or rates may discriminate against domestic or other classes of customers, or the form of the rates may deny full service. Some commissions, therefore, endeavor to regulate rates as well as earnings. Others hold that designation of rates is a prerogative of management and hence merely require companies to file rates which will reduce revenues by a specified amount.

The California, New York and Wisconsin commissions control the form of electric rates, while Connecticut, Massachusetts, Michigan, Oregon and Tennessee, with few exceptions, leave the rate form to the utility. Six of these states reflect the national tendency toward a simple block rate for domestic service, while California and Wisconsin rates include a fixed service charge separate from the charge for energy.

With the possible exception of Oregon, all the commissions visited specify in rate cases or negotiation the amount by which revenue from each class of service is to be reduced. But few specify the manner in which the reduction is to be accomplished. None relies on detailed allocations of costs to determine the rates for each class of service. Some occasionally make such analyses but do not use them — except, possibly, in determining the cost of large-scale services. Commissions state that the relative value of services, elasticity of demand and existing differentials must also be taken into account.

Competition rather than cost is generally conceded to determine rates for large industrial service. These rates are believed often to be below the level needed fully to cover cost, but above that necessary to meet the added cost of serving the industrial customers as a group.

Regulation of Service

With the exception of Ohio, all state commissions with jurisdiction over electric utilities have authority to require extensions of service within a utility's franchise area. All — except Connecticut and New York — assume that their statutes permit them to order extensions into

political subdivisions or other areas which the company is not serving and which it does not hold itself out to serve. But only Wisconsin and Tennessee have ordered a utility into new territory under such circumstances. Commissions also seek to insure reasonable service requirements, including credit rules.

The conditions under which companies extend service beyond distribution lines vary widely in the eight states under survey. None of them has uniform extension rules, either urban or rural.

The evidence shows that commission regulation of the availability of electric service is uneven. But service requirements are being liberalized, and incidental experimentation on the part of both utilities and commissions probably accounts for much of the present disorganization.

The commissions in general seem convinced that the utilities now maintain such high standards that there is little need for regulatory action as to the quality of service. The staffs of only two of the commissions with whom the matter was discussed thought commission attention was warranted. The Massachusetts, California and Tennessee commissions have never specified general service standards. But some of the others have done so.

Some conditions of service are regulated. All the states surveyed, except Massachusetts and Tennessee, require utilities to record service interruptions. In California, New York, Michigan, Oregon and Tennessee electric meters are not allowed to register more than 2 per cent fast; in Connecticut and Wisconsin, 4 per cent; in Massachusetts, 5 per cent. Only California, New York and Wisconsin undertake periodic "spot checks" as distinguished from tests made in response to customer complaints.

California and Wisconsin permit customers to demand a free meter test every six months; Oregon, every year. All of the commissions, except California, Michigan and Oregon, provide for a "referee" test by a staff member at the request of any customer dissatisfied with the company's test. The rarity of referee tests reflects the high quality of service provided by the utility companies.

Are Administrative Methods Adequate?

Customer complaints which, under the statutes, do not demand pub-

lic hearings and written decisions by a majority of the commission, are generally termed "informal." Some commissions receive hundreds of informal complaints annually. Most of them relate to quality of service, extensions of service and the application of rates, and the adjustment of such complaints constitutes a major duty. The best test of a commission's aggressiveness in adjusting this class of complaints is its willingness to open a formal investigation on its own motion if other means fail.

None of the commissions visited is taking adequate steps to inform the public of its availability in the settlement of informal complaints. Some states mention this service in their published reports but most commissions deny the need for public information. Thousands of utility customers nevertheless know nothing about the state commissions and their duties. Evidently the public must learn about the provisions for its protection indirectly.

Formal complaints may generally be entered by a municipal official, a corporation, a group of utility customers or "interested parties." The Supreme Court has required that the evidence be considered and the decision rendered by the persons designated by law. But it is evident that the commissioners cannot personally hear all the evidence and write the opinions and orders in all formal cases submitted to them. Time so spent must be taken from policy forming and other administrative duties.

However, the Connecticut, Massachusetts, Michigan and Tennessee commissioners do attempt to act as examiners in all cases. The New York commissioners attempt to arrange for at least one of their number to be present at all major hearings. The Wisconsin commissioners attend only the oral arguments in the more important cases, leaving the remainder of the work to special examiners. The California and Oregon commissioners, retaining no special examiners, freely use department heads and other experts.

In Massachusetts the commissioners usually write opinions and orders in securities cases but not in others. In California and Oregon the department heads who hear the evidence also write the opinions in their respective fields. Wisconsin's examiners draft decisions, and various staff members do so in Connecticut New York, Michigan and Ten-

nessee, with the brunt of the work falling on the legal departments in the case of New York and Connecticut. Apparently, the commissioners have found it impossible or undesirable to separate the administrative from the judicial phases of their work.

Without exception the commissions purport to follow judicial rules of evidence, but much doubtful evidence seems to be admitted "for what it is worth." This is sometimes useful in dealing with untutored complainants out of court. Wisconsin appears to be alone, however, in systematically using informal pre-hearing conferences to clarify issues.

Of great importance to the public, of course, is the attitude of the commissions towards complainants. Wisconsin's commission (at least through the year 1939) and California's commission definitely assist complainants, chiefly by concurrent investigations on their own motion. The New York and Tennessee commissions sometimes follow this procedure but more frequently introduce their own evidence, acting more or less as "people's counsels." Connecticut and Massachusetts commissions regard themselves as judicial bodies. Michigan and Oregon have not clearly revealed their stand on this matter.

Varying Initiative of Commissions

All commissions with jurisdiction over electric utilities now have power to initiate action. But some of them continue to wait for complaints while others use their power only sporadically. California, New York and Wisconsin have had the personnel and the factual information essential to full and continuous use of their powers of initiation. And they have also made use of them. Annually or oftener each of these commissions analyzes the operation of every public utility and proceeds to negotiate informally for rate reductions where warranted by their findings. The fact that three commissions of the group surveyed have adopted programs of continuous investigation and action upon their own initiative is a hopeful development. Although the number is small, the movement for continuous regulation may grow as more realistic utility plant records become available.

The use of temporary (or emergency) rates to meet swiftly changing economic conditions has not, on the whole, proved successful. Commissions ran into special difficulties when they attempted to use their

powers under emergency or temporary rate laws to reduce rates in the decade following the 1929 depression. Only the New York commission seems to have been successful in obtaining a workable law authorizing temporary rates.

"Sliding-scale" regulation deserves attention because of its potentialities even though it is not widely used. Its purpose is to encourage managerial efficiency and rate reductions by coupling them with automatic increases in the allowable return to stockholders. The District of Columbia commission has won a national reputation in its sliding-scale regulation of the Potomac Electric Power Company. In view of the success and recognition of this experiment it seems surprising that none of the commissions surveyed has adopted this method in recent years. But the fundamental principle of permitting a somewhat higher than normal return to particularly cooperative and low-rate companies may have been followed more than is generally known by those commissions which have concentrated on continuous regulation by informal negotiation.

The establishment of the Tennessee Valley Authority in 1933 and the publication of typical electric bills by the Federal Power Commission in 1935 emphasized local rate comparisons and suggested a way for state commissions to bring pressure on high-rate, high-cost companies by comparing their operations with low-rate, low-cost companies. But so far as could be ascertained in this survey, no commission has ever based a formal order on such comparisons. Furthermore, staff members of the commissions varied widely in their views of the possible usefulness of "yardsticks" of costs and expenses.

Company Records as Regulatory Tools

All commissions with jurisdiction over electric utilities are authorized to prescribe the form of utility accounts. Of the eight commissions visited, Michigan has adopted the latest classification without change — that of the National Association of Railroad and Utilities Commissioners. This was modeled on the "system of accounts for public utilities and licensees under the Federal Power Act," prescribed by the Federal Power Commission. Oregon, Wisconsin, California and Connecticut have adopted it with modifications.

The systems of both the Federal Power Commission and the National Association of Railroad and Utilities Commissioners require, as no previous "standard" system did, that property accounts be adjusted to record only the cost incurred by the person who first devoted it to a public use. This reclassification of utility property at original cost should settle in advance of formal proceedings much that has been in controversy up to this time.

Along with the extended adoption of original cost in plant accounting, utility companies have been required to accrue reserves based upon an estimated life of the property (depreciation accounting) rather than to accumulate reserves intended merely to absorb fluctuations in annual property retirements (retirement accounting).

Progress has not been uniform. It is clear, however, that within the past few years the state commissions have been laying the groundwork for more effective regulation through more stringent accounting requirements.

Every commission with jurisdiction over electric utilities requires of them an annual report of operations. In 1940 twenty-one out of a total of forty-one commissions prescribed either the present form recommended by the National Association of Railroad and Utilities Commissioners or that of the Federal Power Commission. Progress in reporting requirements has been closely related to progress in accounting requirements. It is hard to understand why some commissions have failed to furnish adequate report forms when two excellent standard forms are available.

Most commissions recognize the importance of research in connection with the work they are called upon to do; but of the eight commissions to which special attention has been given in this survey, only California, Wisconsin and New York maintain departments in which responsibility for research is centralized. Considering the inadequate staff which is available to handle even routine procedure in many commissions, it is not surprising that few undertake work not directly connected with the specific cases before them.

Adequacy of Staff Personnel

Any direct appraisal of personnel has been impossible except in

terms of personal opinion — which is always open to question. In general, five of the eight commissions surveyed appear to have staffs of excellent quality and at least passable quantity. Three are badly understaffed with a personnel of uneven quality.

Staff competence must, of course, largely depend upon experience, remuneration and opportunity for advancement. Tenure of service has been fairly secure in the states visited, with the exception of Michigan. The California and New York commissions pay their department chiefs substantially better salaries than the others visited. Wisconsin and Connecticut salaries appear adequate; those of Tennessee and Oregon definitely inadequate. Possibilities of advancement are less favorable. Promotions from the lower ranks to heads of departments and thence to commissioners have been rare. Commission employees and commissioners often leave the public service to join the utility companies under more attractive conditions. Prospects of advancement within a commission are slight, and since utility companies are glad to secure men trained in the regulatory field, it is not surprising that many commission employees have secured positions with the companies they have helped to regulate.

Regulatory agencies can hardly attain maximum efficiency if they are used as training schools for employees who later enter the business world. The Federal Power Commission attempts to deal with this problem by prohibiting any former commission employee to appear before it as a company agent within a year after he has left the service. It is clear that regulation will be effective only when commissions can develop and retain trained and aggressive public servants, who find adequate compensation — both monetary and otherwise — in their work.

3. REGULATION BY FEDERAL COMMISSIONS

a. THE FEDERAL POWER COMMISSION

The Federal Power Commission is the only federal agency with power directly to regulate the rates and service of electric utilities. Its jurisdiction over rates is limited to (1) power produced at hydroelectric developments which it has licensed, (2) power transported in inter-

state commerce and sold at wholesale for resale and (3) power generated at certain federally-operated projects. Its authority over service rendered by utilities, although more restricted than that of most of the state commissions, applies to all utilities, public and private, subject to its jurisdiction, whether it controls their rates or not.

The Commission controls hydroelectric projects in the federal jurisdiction through its power to decide by whom and in what manner water power shall be utilized, and (where states have failed to establish proper authorities) to regulate the rates and profits of licensed projects after they are in operation. The Commission may license a project if it is adapted to a comprehensive plan for improving or developing a waterway for the benefit of interstate commerce, water power development and "other beneficial public uses."

The Federal Power Commission has usually refused to license projects which only partially utilize the power potentialities. In seeking the full benefits available at a site, navigation, protection of fisheries, power and "other beneficial uses" must be considered, the latter including the use of the site for irrigation, water supply, recreation or flood control. The FPC is required by law to give preference to states and municipalities as against private concerns as licensees where the plans presented by the public body are at least equally well adapted to develop the area.

Although the Commission has virtually neglected until recently to regulate its licensees, it has always been conscious of this duty. At the very beginning of its existence it emphasized the importance of determining the original cost of projects but confessed its inability, with the personnel at its disposal, to undertake this work.

The appropriations for the Commission were reduced from \$100,000 in 1921 to \$26,000 in 1927 but later increased from \$170,000 in 1930 to \$302,300 in 1935. The Commission became much more active after the amendment of the Federal Water Power Act in the latter year, but the determination of the original cost of licensed projects still is lagging and few regulatory proceedings have been undertaken.

Use of the Commission's Powers

The FPC has not attempted to use its power to dispose of profits of licensees in excess of a reasonable rate on their net investment. This

"reasonable return" has been set at 6 per cent since 1937.

Until 1937 the Federal Power Commission had made no use of its authority to regulate the rates of a licensee (1) part or all of whose power enters into interstate and foreign commerce, (2) where no state authorities exist to secure reasonable nondiscriminatory rates or (3) where the states concerned cannot agree among themselves. Since then it has chosen to act under this authority in one case. It could also have proceeded under its power to regulate the price of electricity sold at wholesale in interstate commerce.

The Commission has made remarkably little use of its power to regulate the sale of electricity in interstate commerce for resale. This has perhaps been due to the fact that its functions have been extended in recent years out of proportion to its appropriations. The magnitude of this task is indicated by the fact that by October 1940, 1,116 electric wholesale contracts, including supplements, were on file with the Commission as active rate schedules.

Its comprehensive rate investigations suggest that the Federal Power Commission desires to lean exclusively on original cost as the determinant of a proper rate base. It has even accepted original cost where it believed that this exceeded the cost of reconstructing the plant. And more than once it has sought to induce the courts to clarify their views concerning the rate base, attacking the rule of *Smyth v. Ames* and advocating the use of prudent investment as sound in administration, economics and law. The Commission is also taking a firm position with regard to depreciation. In its annual report for 1940 it points to its "insistence . . . on the deduction of an adequate depreciation reserve from cost of property with resultant lowering of rate base" as one of the four most important developments in its rate-making policy.

The FPC has allowed a return of 6 per cent in most electric rate cases. Even though this rate was questioned by a commissioner in one case the Commission has given few reasons for the rate. In a recent decision involving the Chicago District Electric Generating Corporation, in which a 5½ per cent rate was established, the FPC showed a determination to set the rate of return in the light of the particular facts of the situation. The Commission pointed out that the generating company serves large successful companies in urban and concentrated in-

dustrial areas, and that the charges are so designed that it is assured of its costs at all times, irrespective of output.

Important FPC Policies

Several of the policies laid down by the FPC are of far greater importance in themselves than the monetary savings which the Commission has achieved in the rate cases it has undertaken. These policies are: (1) suspending rate increases until amply justified by supporting information, (2) restricting testimony regarding rate base to the subject of prudent investment, (3) allowing for depreciation by "deduction of an adequate depreciation reserve," (4) designating as discrimination any case where customers of the same class are served at differing rates and (5) ordering immediate interim rate reductions where justified by the respondent company's own testimony.

The Commission has exercised its authority over federal projects only at Bonneville. In that case it has allocated the joint costs between power and navigation and approved of the rates at which power is sold. The Commission also has rate jurisdiction at the Fort Peck Project.

In 1935 the Commission was authorized to divide the country into electric power regions and accomplish — either by voluntary action by the utilities or by compulsory action by the Commission itself — "the interconnection and coordination of power facilities within such districts" in line with a "planned coordination of the power facilities and resources of the nation." No such regions have been established, although intensive surveys have been made for the region east of the Mississippi. During 1940 the Commission considerably expanded its surveys of the nation's generating capacity in an effort to assure adequate power supplies in areas vital to the national defense program. These are described in Chapter 11, page 195.

The FPC prepared the way for more active regulation as well as for the "computation of statistical and other data useful in the administration of the Federal Power Act," by an order of June 16, 1936. In it the Commission prescribed a uniform system of accounts for public utilities and licensees subject to its jurisdiction. The system is applicable to about 275 electric utilities. The value of their property, aggregating more than \$9 billion, represents about 75 per cent of the property of

all private electric utilities. The most important effect of the accounting system is the segregation in two adjustment accounts of differences between the original cost of assets and their book cost.

Exercising its jurisdiction over mergers and property transfers, the Commission has passed upon transactions involving properties with a book value in excess of \$1.25 billion.

In 1936 the Federal Power Commission investigated the activities of Howard C. Hopson and his associates in the Associated Gas and Electric Company system. It reported that it had found "an extraordinary picture of the exploitation of an essential public service for which the holding company device served as a cloak. Almost every possibility for plunder was exploited." The report concluded that "while the record of this proceeding presents perhaps an extreme example of the evils of the holding company system in the public utility field, it was no isolated instance." But the Commission gave no supporting evidence of the prevalence of these practices among holding companies at that time.

Acting under its emergency powers, the FPC ordered a number of interconnections and modifications of arrangements between electric utilities in 1941. It declared a power emergency in the Southeast and ordered the necessary steps to cope with the shortages in defense industries. (See also Chapter 6, page 90; Chapter 11, page 200.)

b. THE SECURITIES AND EXCHANGE COMMISSION

The Securities and Exchange Commission also regulates service companies — under a provision of the Holding Company Act of 1935 which was placed there largely because of the inadequacy of state regulation.

Before 1930 state commissions made some direct attempts to regulate such concerns but the Supreme Court decision in *Smith v. Illinois Bell Tel. Co.* clearly indicated that such control was without legal basis. Since 1930 state commissions have tried to regulate them indirectly. This control has been exercised in two ways: (1) through rate cases involving affiliated operating companies and (2) through statutory powers over contracts between public utilities and affiliated interests. Twenty-two states have statutes which permit their utility commissions

to regulate servicing organizations indirectly through powers over service contracts.

Indirect regulation of servicing organizations by controlling allowances for fees in rate cases is beset with the difficulty of developing and applying tests of reasonableness. It is also subject to the following limitations: (1) a commission can merely reduce or eliminate the fees paid in calculating operating expenses; (2) the control is sporadic, subject to delay, and expensive; (3) uniformity of treatment is difficult to achieve since a commission may deal with only one operating company at a time, whereas several companies, perhaps located in different states, may be serviced by the same organization.

The section of the Holding Company Act providing for the federal regulation of service companies has three main objectives: (1) the performance of utility servicing at cost, (2) efficiency and economy and (3) fair and equitable allocation of costs among the companies receiving service. Since proper accounting and reporting are basic to regulation, the SEC has required service companies to keep accounts on a uniform basis.

SEC Policies

The SEC has generally limited "necessary capital" to conduct operations to amounts representing investment in necessary assets, measured at depreciated book value, with an allowance for working capital varying from one to three months' expenses. Under the law both mutual and subsidiary service companies must perform services at cost. But the SEC has broader jurisdiction over the organization and operation of mutual service companies. Also, in the case of the latter, "cost" must represent "a reasonable saving to member companies over the cost to such companies of comparable contracts performed by independent persons."

The uniformity of SEC policy with regard to both mutual and subsidiary companies has prevented the selection of the less severely regulated form of company to evade regulation. Anyway, the difference between the two types is not sufficient to justify different treatment.

There has been a marked tendency for holding companies to shift their expenses to the operating companies by means of common officers

and employees. The SEC dealt with this practice in a series of proceedings during the fiscal year 1941. The Commission has laid down the broad principle that compensation and collateral expenses of all holding company officers, directors and employees must be borne directly by the holding companies and not shared with controlled service companies.

Interlocking Directors Prohibited

The Federal Power Act prohibits the interlocking of directors or officers between public utilities or between a public utility and a bank and others authorized to market utility securities, or suppliers of equipment to utilities — unless the Federal Power Commission rules that “neither public nor private interests will be affected thereby.” Of interlocking positions held by approximately 300 executives to which the Commission has so far given consideration, 115 were settled by resignation or consolidation, 38 were found to require no authorization, 68 were granted authorization and 110 are still to be settled.

Relations of the Federal Commissions with the States

The coexistence of federal, state and local regulation of electric utilities provides occasion for conflict and need for cooperation. State commissioners have been opposed to the extension of federal control. Congress has sought in various ways to minimize conflict by avoiding federal trespass upon the jurisdiction of the states. The only public dispute over the proper line between the powers of the federal and state governments has arisen in connection with the licensing of hydro projects. The Federal Power Commission has repeatedly shown concern in its reports over the best way of cooperating with the states.

FPC Publications

Under its authority to investigate and collect current information, the FPC has prepared and made available to other regulatory authorities and to the public a mass of useful data. Its annual publication of typical electric bills, by states, for all communities in the country having more than 250 population is the most widely used. It has recently published its *National Electric Rate Book*, containing rate schedules in

detail for all communities of 1,000 population or more. Among its other important contributions have been a *Directory of Electric Utilities*, a *Directory of Generating Plants*, an annual report on *Statistics of Capacity and Output of Generating Stations* and an annual volume of *Statistics of Electric Utilities in the United States*.

The Commission seeks by its statistical work to facilitate comparison of the performance of different electric utilities in order to apply a downward pressure to rates and costs.

Chapter 4

REGULATION: EFFECTS AND APPRAISAL

THE PRECEDING CHAPTER provides a basis for judging, in a general way, the effectiveness of regulation. In the present chapter an attempt is made to judge it statistically. Three aspects of utility operation are covered: profits, expenses and rates. No further attempt is made to appraise the effects of regulation on the quality or availability of service. It is impossible to do so in statistical terms.

1. EFFECTS OF REGULATION

The profits of private companies may be studied from three points of view: movements in the market price of securities, earnings per share of stock and earnings in relation to property investment.

Effect on Prices of Securities

It is commonly believed first, that common stocks of electric utilities were among the most widely fluctuating securities during the period from 1922 to 1932, and second, that these fluctuations indicate that investors or speculators regarded regulation as ineffectual for the most part. The facts do not support either contention.

In the first place figures are scarce. Mergers of operating companies have left few private systems whose securities have been quoted over a long period of time. Also, the formation of holding companies during the 1920's removed from the market much of the common stock of operating utilities and substituted for them a variety of holding company securities.

In one way the earnings of holding company securities might be expected to tend toward stability rather than variability. They average

returns from widely distributed investments. But they are influenced by factors peculiar to themselves that make for instability. Where several layers of bonds and preferred stock may have been issued against holdings consisting mainly of common stock, a change in earnings of an operating company causes a disproportionate change in the return of the holding company's common stock. In part, also, holding company earnings come from payments for services to subsidiaries. From 1924 to 1929 service charges were increasing, partly because of increased charges for a given service and partly because more service was being supplied, especially in connection with plant expansion. After 1929 a general decline in these charges tended to accelerate the decline in holding company stocks.

For these reasons common stocks of holding companies might be expected to fluctuate more widely than common stocks of operating companies. Between 1924 and 1932 they did, but this instability was not so evident between 1920 and 1922, or between 1932 and 1938. Investors may have been slow to realize the possibilities of profits in holding companies, but after 1924 they appear to have gone too fast and too far in the other direction. Between 1932 and 1938 the decline of both operating and holding company stocks followed parallel lines.

In so far as stock prices reflect at all the judgments of investors as to the effects of regulation, the behavior of stocks of operating companies is more likely to mirror that opinion than the securities of holding companies. Common stocks of operating companies rose from 1920 to 1929 and fell from 1929 to 1934. But do these changes suggest that investors believed that regulation of rates would have little effect on earnings?

These movements may have been due: (1) to changes in the capital value investors place on a given anticipated income from a stock or (2) to their anticipation of changes in income. Between 1920 and 1922 earnings per share of common stock of operating companies rose more rapidly than their prices; from 1922 to 1929 earnings rose less rapidly than prices; from 1929 to 1934 (except for 1933) stock prices fell more than earnings. In part, therefore, both the rise and the fall in security prices were due to changes in the valuation placed by investors on the prospective income from utility stocks and not to any opinion

they may have had about regulation. After all, this phenomenon was not peculiar to regulated industries. Between 1925 and 1932 investors were also paying a steadily increasing price for a given income from the common stocks of unregulated companies.

Regulatory commissions and the courts took little account of the fact that because of general conditions, investors would, between 1922 and 1929, accept a declining rate of return. In fact, between 1920 and 1930 courts and commissions allowed a return of 6 to 8 per cent. These rates were little adjusted to the behavior of investors. Conversely, the rise in the rate of return required by investors between 1929 and 1934 would suggest an increase in the "fair return." Yet no substantial increase occurred. The rate remained usually between 6 and 7 per cent. But the difficulty of raising the rate during a depression may help to explain the failure to reduce the rate of return between 1924 and 1929.

Regulation and Earnings

Earnings per share of operating company stocks rose sharply between 1920 and 1922. After declining slightly from 1922 to 1924 they rose again, and almost continuously, until 1930. Earnings per share increased about 308 per cent in the twenties but lost about 45 per cent of the increase between 1930 and 1935.

These changes in earnings probably resulted partly from the failure of commissions to adjust the allowed rate of return year by year. But they were also due to other aspects of regulation. Unit costs in the twenties were declining because of improvements in technology and a steady growth in demand. Since allowable rates for electricity are often computed on the basis of past costs and past demand, the lag in regulation permitted actual earnings to exceed estimated earnings. A decision of the United States Supreme Court in 1926 supporting the reproduction cost rate base also assisted the upward trend in earnings, inasmuch as construction costs often were higher during the decade 1920-1930 than they were when the plants were built.

While utility earnings fluctuated widely from 1920 to 1930, industrial earnings in general were even more erratic and fluctuated more widely. On the other hand, regulation cannot be said to be the sole cause of the relative stability of electric utility earnings. Nor is it prob-

able that the rise in prices and earnings per share of electric utility common stock up to 1929 reflected weakening regulation, and the decline after 1929, more effective regulation. These movements were primarily due to general economic conditions and to the rapid expansion of electric utilities.

A more direct way to judge the effect of regulation on earnings is to compare the "utility operating income" of operating companies in regulated as against unregulated states, i.e., in states with and without state commissions. But even this method leads to no clear-cut conclusions.

An analysis of a number of representative companies in fourteen states (California, Connecticut, Florida, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Jersey, New York, Oregon, Tennessee, Texas and Wisconsin) in 1929 and 1937 shows that the regulated companies generally fared better than unregulated companies in both years. As a matter of fact the highest earnings ratios of the regulated companies are far above any acceptable fair return and are much higher than the highest returns from the unregulated companies. In 1929, for example, of six unregulated companies for which ratios are available, none exceeded a 9 per cent return, against fourteen out of thirty-four of the regulated companies. In 1937 three out of fifteen unregulated companies exceeded a 7 per cent return, compared with eleven out of thirty-nine regulated companies. These ratios are based on reported figures which are not entirely reliable since the companies do not follow the same accounting practices in recording property and plant.

General conditions also throw doubt on the comparison. The group of states without regulatory commissions lie mostly in the South while the states with commissions are chiefly in the more populous and prosperous North and West. The consumption of electricity, both for industrial and residential purposes, has lagged in the South, and capital invested in southern electric power projects might be expected to earn lower rates than in the North, where a growing market brought relatively higher profits despite state regulation. Furthermore, the available data as to the taxation of utilities suggest that most regulated companies earned high returns in spite of the fact that they paid much higher taxes than the unregulated companies.

Effect on Rate Reductions

To determine the effects of state regulation on rates, it is necessary to consider the underlying reasons for the wide variations in rate patterns from region to region and city to city. Average bills for given amounts of service are twice as high in some states as in others and differences between communities are even larger.

The Federal Power Commission in computing average bills by states in 1939 found the lowest averages for the Pacific Coast states and Tennessee, and the highest for Florida, Arkansas, Arizona, New Mexico, Wyoming, the Dakotas and the states northeast of Pennsylvania.

But over-all state averages do not reveal the reasons for variations within or between states. For example, variations within the group of communities of 50,000 population or more are especially important since they include 52.4 per cent of the total population served. In general the downward trend of rates, as community size increases, continues among the largest cities. Average state bills are also influenced by the number of publicly-owned plants in each state. Yet even if these are excluded and the comparison is further restricted to the rates of privately-served communities in a single population group, the averages differ considerably from state to state.

One possible cause of rate variations is the availability of hydroelectric power: prices might be somewhat lower in states which obtain power chiefly from hydroelectric sources. The cost of fuel may be a factor even in states which are not largely dependent on fuel plants, for high fuel costs make it economical to develop the less favorable and more costly hydroelectric sites. The average consumption per customer also affects the level of typical bills. Finally, the rates of private plants may be influenced by those of nearby public plants.

All these influences, acting simultaneously, produce a complex result. It can perhaps best be analyzed by the mathematical method of multiple correlation, in which the net effect of each factor is calculated with due regard to the influence of the others. This method indicates the following conclusions:

1. Average consumption per customer is the most important of the four factors listed above and, for an increase in average residential consumption from 1,000 to 1,111 kilowatt-hours per year, there is an eleven-cent reduc-

tion in the bill for 100 kilowatt-hours.

2. The next most influential factor is fuel cost. For every one-mill increase in the cost of fuel per kilowatt-hour, the 100 kilowatt-hour bill increases by thirteen cents.

3. For each increase of 10 per cent in the percentage of total output generated in hydroelectric plants, there is a decrease of about three cents in the bill for 100 kilowatt-hours. Since most states relying largely upon hydroelectric power also have high average consumption, this result is not altogether reliable.

4. Finally, if the number of communities served by public plants increases by 10 per cent of all communities with electric service, the average bill for 100 kilowatt-hours tends to decrease by about 10 cents. But this result is also inconclusive because the effect is small, and large random fluctuations remain unexplained.

The wide variation in average rates remaining after full account is taken of these four factors indicates that other forces must be considered. Does the pressure of competition explain some of the local differences in bills? One way to answer this question is to determine whether the rates in communities served by competing systems are generally lower or higher than those in places served by a monopoly.

Effect of Competition

Direct competition between a private and a publicly-owned electric utility existed in 85 communities of more than 250 population on January 1, 1939. The rates of the competitive private utilities were lower than the corresponding state private average in 62.5 per cent of all the typical bills analyzed. The results are more striking if the comparison is limited to the 25 communities with a population of 10,000 or more. In this group 74 per cent of the private competing bills were lower than the state private average. With the exception of the bills for the largest power consumption and for residential and small commercial consumption in the smaller communities, the private competitive bills were substantially lower than the average of all private bills, especially in the larger communities.

Although competition may be said to be indirect where public and private utilities serve different parts of a community with little or no overlapping, the rates of eleven such urban communities were analyzed.

Out of 81 rate comparisons in these divided communities, 60.5 per cent show private rates lower than the state average for the population group. These average ratios merely suggest that the indirect competition between public and private plants tends to lower private residential rates.

Apparently, direct competition tends to reduce rates more than indirect competition, even though the former may bring greater duplication of investment. Competition from public plants, direct or indirect, presses private rates downward fairly sharply. Direct public competition has its greatest effect on commercial rates; indirect public competition, on residential rates. Direct competition between private plants appears to have some effect on rates, but where a community is divided between private systems, there is no effective competition.

Regulated versus Unregulated Rates

To determine whether state regulation has exerted a downward pressure on electric rates, sample bills for commercial lighting and residential service were compared in states with a regulatory commission and states having no such agency. The analysis is presented with the emphasis on trends over a fifteen-year period — from 1925 to 1940 — rather than on absolute differences at any given date. The states chosen for analysis are the same group of fourteen regulated and unregulated states selected for the study of earnings (see p. 56), with the exception of Nebraska, Tennessee and Oregon. These were excluded because each contained fewer than three cities of the size selected for study — those with populations from 20,000 to 200,000.

The study shows that the rates for residential service were much higher in all the unregulated states at the beginning of the fifteen-year period. There was a pronounced decline, however, in the price of electricity for residential use throughout the period in both regulated and unregulated states, but it was much greater in the unregulated states. For instance, the unregulated price for 25 kilowatt-hours dropped 47 per cent while the same bills in regulated states fell only 28 per cent. For 100 kilowatt-hours the decrease in unregulated states was 55 per cent compared with 38 per cent in the regulated states. Similarly, the bills for 250 kilowatt-hours dropped 62 per cent and 46 per cent, re-

spectively. The more rapid fall in the unregulated states may show that unregulated companies waited for regulation to force other companies to demonstrate the profitability of a more liberal rate policy before adopting it themselves.

With one insignificant exception, the unregulated states also showed the larger percentage reduction for each consumption in every period. In both regulated and unregulated states, the greatest reductions in the bills for 25 kilowatt-hours occurred between 1935 and 1940. The greatest reductions in the larger residential consumptions took place in the 1925-1930 period. Utilities in both categories were able to make spectacular reductions for the larger consumptions with little sacrifice of revenue in the early period. But once these cuts had been made and the use of electricity had grown, additional reductions, costing more in immediate loss of revenue, came at a much slower rate.

During the 1930-1935 depression the rate of decline was at its lowest for all consumptions in both regulated and unregulated states. Yet regulation during the depression period failed to reduce rates as fast as in unregulated states. For example, the unregulated bill for 25 kilowatt-hours was reduced by more than 12 per cent and the regulated bill by less than 5 per cent. Why this was so is not clear. Companies in both groups of states were suffering from depressed business but there is no indication that regulated companies were suffering more than unregulated companies. The fact that unregulated rates were still out of line with those of regulated companies may have been the answer.

The much higher residential bills in unregulated states in 1925 explain why the unregulated companies could make remarkable reductions in the early years. The tremendous differences which existed in 1925 had largely disappeared by 1940. The unregulated bill for 250 kilowatt-hours, for instance, had caught up to the regulated bill by or before 1935; the bill for 25 kilowatt-hours had caught up to the regulated bill by 1940, and the unregulated bill for 100 kilowatt-hours was only 8 per cent above the regulated bill by the same year.

Rates of course reflect differences in cost as well as differences in the pressures of regulation. It is impossible to adjust prices statistically to allow for all the factors that influence costs — such as source of power

and character of market. But since these differences are generally least between neighboring states, residential bills were computed for pairs of neighboring regulated and unregulated states, i.e., Wisconsin-Minnesota, Oklahoma-Texas and Alabama-Mississippi. These indicate that in one instance (Wisconsin-Minnesota) regulation shows no advantages after the early years of the period, in another (Alabama-Mississippi) regulation shows to considerable advantage for the whole period, and in the third (Oklahoma-Texas) the results vary.

Effect of Regulation on Typical Commercial Bills

The analysis of commercial lighting rates in this study has been restricted to a comparison at relatively low consumption levels in smaller cities. The competitive influence of alternative power sources open to extremely large users is in this way eliminated and the results have greater meaning. Index numbers of average typical bills at five-year intervals show a pronounced decline in the price of electricity for commercial lighting throughout the period 1925-1940 in both regulated and unregulated states, but the greater fall is in the unregulated states.

The most interesting conclusion to be drawn from the comparison of decreases in average commercial bills for each of the three five-year periods is that the greatest reductions were made during the most recent period, whereas residential bills were most sharply reduced in the earliest period. Apparently regulation, having led the way in residential reductions, has more recently begun to take the lead in reducing commercial lighting rates.

In spite of the larger percentage reductions in the unregulated states, average typical bills for commercial service have remained lower in the regulated group at all consumption levels at each of the five-year intervals. This final result is in contrast with the behavior of exclusively domestic bills.

The small commercial lighting customer has often been dubbed the "forgotten man" among purchasers of electricity. On the one hand, he is less numerous than the residential consumer and, on the other, he is not individually large enough to threaten competition by generating his own power. Yet the analysis in this study indicates that he has re-

ceived substantial rate reductions during the past fifteen years in both regulated and unregulated states. But these have not been as great as those domestic users have enjoyed.

Conclusions as to Rates

Summing up, the sample study shows that since 1925 the price of electricity for residential and small and medium commercial lighting service has generally been lower in regulated than in unregulated states. This advantage — which was considerable in 1925 — has diminished in each successive five-year period. By January 1, 1940 domestic rates were about the same in both types of states, but commercial rates were still measurably higher in unregulated states.

The most plausible explanation of these results is that state commissions exerted effective pressure on rates during the entire period, while unregulated companies escaped such pressure. By 1935, when rate differentials tended to disappear, the unregulated companies yielded to the public demands for lower rates, partly because of the successful experience of companies which had reduced prices.

But again there are factors which blunt the edges of these comparisons. Differences in the density of population, the relative extent of municipal and private utility operations, the availability of cheap hydro-electric power, the proximity of coal fields, the relative proportion of various classes of customers and the degree of taxation, have all influenced rate levels, as well as has the work of state commissions.

In states without any state regulatory body, public opinion might possibly operate as a sort of regulatory force. But it is not safe to conclude that residential rates would be where they are today if public opinion had been the only regulator. Public opinion can probably exert effective pressure on rates only where state commissions (or other agencies) furnish a yardstick by which they can be judged. The Federal Power Commission is probably correct in assuming that the publication of typical bills, together with the resulting publicity, have contributed greatly to the reduction of rates throughout the country.

The similarity in the relationship between the average price of commercial and residential service in both groups of states, suggests that interclass relationships originate with the companies. The observation

of the administrative processes of state commissions supports this theory.

The fact that unregulated rates showed larger reductions than regulated rates during the depression period 1930-1935, a time when most utilities were wary of experimenting with reductions, also suggests that public opinion, which was then extremely vociferous, was more effective in unregulated states.

It is clear that no simple generalizations can be based upon the analysis in this survey. The conclusions must be carefully qualified. The results are certainly far from uniformly favorable to state regulation. But one thing seems clear: regulated rates for residential and commercial service have, for the greater part of the period surveyed, blazed the trail for reductions in unregulated states. At least some credit for this achievement should go to the state commissions.

Declining Costs under Regulation

A comparison has been made of certain operating expenses in regulated and unregulated states to find out whether economical operation is consistent with state regulation or whether regulation has induced an inflation of costs to support existing rate levels. It was based on operations of the sample companies employed in the previous analysis of earnings.

To obtain conclusive evidence a comparison of the production and transmission expenses of regulated and unregulated companies should, of course, make proper allowance for differences in source of power, character of market, size of plant, transmission-line voltage, types of supporting structures and the like. The number of sample companies for which the necessary information is available is so small that any attempt to allow for these factors has not been possible in this survey. But, as will be seen, the results have at least a negative value. They are briefly as follows:

1. Distribution expense, may, of course, vary considerably from year to year and from company to company. But the ratios resulting from the study reflect generally higher distribution expense among the unregulated companies. The simple average of their ratios, however, is only 6 per cent greater than that of the unregulated sample.

2. Unlike distribution expense, commercial expense — which consists largely of the cost of accounting and bill collecting — does not vary much from year to year. The comparison suggests that regulation has had little effect on this item.

3. Sales promotion expense often varies from year to year because sales campaigns are intermittent. The simple average for the unregulated companies is 67 per cent above that for the regulated companies. Yet there is no indication that the regulated companies, as a group, have padded this account to head off rate reductions.

4. Administrative and general expense is particularly susceptible to variations between companies. Here the unregulated companies report substantially higher ratios than the regulated ones, with their simple average 60 per cent above that for the latter.

5. As to depreciation expense, unregulated utility companies had lower depreciation-to-property ratios on the average than the regulated sample, regardless of whether the source of power is steam or hydro. With the exception of regulated companies generating more than 75 per cent of their power by steam, the companies under observation had a higher average depreciation accrual in 1937 than in 1929, whether regulated or not.

6. Tax payments are such an important item of utility expenditures that they have been included in the analysis even though unaffected by state regulation. The regulated utilities in the sample studied pay much higher taxes than the unregulated: approximately 106 per cent more if tax payments are related to plant investment; 35 per cent more if they are related to operating revenue. Likewise, no regulated company shows a tax ratio on either base as low as the lowest among the unregulated companies. And conversely, no unregulated company shows a tax ratio on either base as high as the highest among the regulated companies.

High taxes usually accompany high rates of return. Possibly the legislatures seek to recapture some of the large profits resulting from ineffectual regulation. States thus sharing heavily in monopoly profits are likely to be deterred from requiring rate reductions which will reduce their tax revenue.

In general, then — with the exception of depreciation accruals and taxes, which call for special treatment — utility companies subject to state regulation show lower costs. But it cannot be concluded that state regulation is entirely, or even partly, responsible. The data were available for only one year's operations and adequate classification of the

sample is impracticable. Nevertheless, our analysis reveals no tendency for state regulation to induce the padding of expenses.

2. AN APPRAISAL OF REGULATION

On the basis of its investigation of electric rate and service regulation in the United States the research staff reached the following conclusions as to its operations and effectiveness.

1. Regulation is an acceptable substitute for competition only if it also stimulates management to reduce operating costs to a minimum consistent with satisfactory service. Without this incentive regulation succeeds in creating merely a "cost plus" system. And since regulation must be broad enough to take full account of consumers' needs and income, it must be appraised by its influence on the profits of utilities and their costs and rates.

2. Municipal regulation and the competition of municipal plants have had only sporadic success. The record of earnings, poorer in the case of municipally-regulated utilities, is probably due to other causes. The significant fact is that many state-regulated electric utilities are earning profits which may be regarded as unreasonable. Hence there is a basis for the widespread feeling (which reached a climax in several state legislatures about 1930) that state regulation in general has failed to achieve its primary purpose.

3. No state can take much credit for declining unit costs, and none has taken advantage of the opportunities offered by this decline to bring maximum benefits to consumers.

4. State commission regulation does not itself cause inefficient and high-cost operation.

5. Control of utility costs by regulating commissions has been hampered chiefly by lack of funds and by inadequate personnel.

6. Rates of state-controlled electric utilities provide the most favorable testimonial to regulation. Commercial rates have been consistently lower under state than municipal regulation, while industrial rates have been determined everywhere chiefly by competition.

7. The Federal Power Commission has, of course, had a limited and brief jurisdiction. Its regulation of licensees only began in 1920, and much of the time since then it has had inadequate appropriations to fulfill its task. Recently the FPC has inaugurated effective regulatory procedures in the field of natural gas, and we can hope that they will be pursued with

vigor and dispatch in the field of electric power.

8. Responsibility for the general impotence of rate regulation, as well as credit for its occasional achievements, rests basically with legislatures, courts and administrative agencies. In the last resort the public has failed to express clearly and emphatically any desire for an effective policy.

9. Congress has enacted a comprehensive law for the regulation of that area of electric service over which the courts have granted it jurisdiction. But only a few state legislatures have gone so far. The chief weakness of state regulation is not so much its failure to pass laws as its failure to provide commissions with sufficient funds to hire experienced personnel.

10. Until recently the chief obstacle to effective state regulation has been the attitude of the Supreme Court of the United States. In construing the Fourteenth Amendment to the Constitution, the Court has held that no regulatory body may require a public utility to charge rates that will result in confiscation of its property, and has set as a measure of confiscation rates that yield less than a "fair return on the fair value of the property used and useful in the public service."

But the Court has laid down conflicting and unworkable principles for determining fair value. It has consistently refused to devise its own formula for determining what is fair value or to approve any formula developed by regulatory bodies. In fact, the Court has declared that the determination of value is a matter not of formulas but of judgment.

Because the tests of utility property value laid down by the Supreme Court in *Smyth v. Ames* are unworkable, various commissions and municipalities have developed and applied more practical procedures. Massachusetts, California, and the cities of Cincinnati and Washington, D.C. have devised methods of regulating rates without going through the expensive and time-consuming process of determining property value as required by the Supreme Court.

The question of most practical significance centers around whether the commissions' findings of fact are final. So long as judicial review extends to both the law and the facts, there will be conflicting views of the reasonableness of utility rates. Either the Court must accept the commissions' findings or it must develop a valuation formula which will guide the commissions.

A unanimous opinion handed down by the U.S. Supreme Court on March 16, 1942 indicates that in the future the Court will accept the findings of a regulatory body if a fair hearing has been given, proper findings made and other statutory requirements have been met. This case involved a

rate reduction, ordered by the Federal Power Commission under the Natural Gas Act of 1938, that had been attacked by the Natural Gas Pipeline Company and the Texoma Natural Gas Company. Chief Justice Stone, writing the opinion, said that "the Constitution does not bind rate-making bodies to the service of any single formula or combination of formulas. Agencies to whom this legislative power has been delegated are free, within the ambit of their statutory authority, to make the pragmatic adjustments which are called for by particular circumstances."

A regulatory commission may now consider itself much freer to employ its own methods of valuation, without facing the possibility of seeing its work upset by the Supreme Court because it neglected a particular factor, such as "reproduction cost," which the Court previously said must be considered. Commission valuations will probably be regarded as final so long as a fair hearing is held and the findings are adequately supported by facts.

In one electric rate case involving the Chicago District Electric Generating Corporation, the FPC faced the valuation issue squarely by using original cost as a basis for rate making. This decision was not appealed.

The Supreme Court may now have an opportunity to undo much of the trouble caused by its long-time adherence to the vague and confusing *Smyth v. Ames* doctrine.

11. Up until recently, uncertainty, inconsistency, delay and expense — for much of which the Supreme Court has been responsible — have done more than anything else to hamper effective public utility regulation in the United States.¹

1. The Supreme Court's decision in the *Natural Gas Pipeline Company of America* case was rendered after this section was written. This decision would seem to relieve the courts of much of the foregoing criticism and place the responsibility for future regulatory ineffectiveness squarely on the regulatory commissions and state legislatures. (See pp. 239–242 of Committee Report for further discussion.)

Chapter 5

FINANCIAL REGULATION

THE SECURITY ISSUES of privately-owned electric systems in the United States are regulated in order to safeguard the interests both of investors and consumers. This form of regulation will be discussed in this chapter. Statutes intended to protect investors, such as the various state "Blue Sky Laws," and the Federal Securities Act of 1933 and the Securities and Exchange Act of 1934 which require truthful statements in prospectuses, and frank and full disclosure of facts, are not within the scope of this study.

1. STATE REGULATION

The regulation of security issues of public utilities began in Massachusetts as long ago as 1871. The Bay State early came to regard securities regulation as the basis of rate regulation. The theory was that rates should return sufficient revenues to pay dividends upon capital stock issued in amounts and at prices approved by public authorities. The example set by Massachusetts was not followed elsewhere. Other states, by contrast, followed the principle that utilities are entitled to a fair return upon a fair value of the property used and useful in the public service.

By 1920 only twenty-two state commissions had jurisdiction over securities of electric companies. The New York and Wisconsin commissions could regulate the purpose and amounts of security issues but not their price; in the other states — except Massachusetts — control was nominal. No state initiated securities regulation between 1920 and 1930, nor did any of the twenty-two revise their statutes much in this respect. But during the decade 1930–1940 the debacle of several gi-

gantic holding company systems spurred ten additional states to assume control over security issues, stock acquisitions, property sales and dividends. But even now many states do not regulate security issues and capitalization. Only thirty-two of forty-seven state commissions regulate the flotation of securities.

In the more advanced states new securities (stocks, bonds and other instruments of debt running more than one year) may not be issued without the commission's approval. Few commissions have adequate control over short-term borrowing.

The effectiveness of regulation of security issues depends, of course, primarily on statutory provisions but it also depends upon the conscientiousness and aggressiveness of the commissions in exercising this function. These qualities of commissions vary as much as the statutes. Possibly this is due to the fact that, generally speaking, state commissions have regarded the regulation of security issues and capitalization as subordinate to the regulation of rates and services. State courts have held that financial regulation is incidental to the main objective of protecting the consuming public.

Basis for Securities Regulation

State commissions generally determine the total securities that may legitimately be issued on the basis of the value of the company's property rather than on prospective or desirable earnings. The term "value" in this respect may have as many meanings as "value" for rate-making purposes. Before 1929 commissions usually appraised property at its "fair value" or reproduction cost, doubtless out of deference to the Supreme Court decision in *Smyth v. Ames*. Yet occasionally they remarked that valuations should not be the same for security purposes as the rate base. Since 1929 state commissions have paid more attention to the original cost of property as a criterion for security purposes. The Federal Power Commission's recent ruling that electric company property must be recorded at its original cost will probably facilitate and popularize this trend.

The utilities' books should obviously be examined if bona fide and reasonable property accounts are to be determined. Until recently few commissions have paid much attention to this matter. Payments for

property and service between operating and parent companies have been examined more carefully in recent years.

As a rule state commissions have disregarded the capitalization of earnings as a basis for securities. They have held that their responsibility for rate regulation and earnings cannot be used as a measure of determining reasonable capitalization. However, earnings may be an important consideration in cases where: (1) prospective earning capacity cannot support a proposed capitalization, (2) the proposed fixed income obligations may be inappropriate in view of prospective earnings and (3) the proposed issues are intended to effectuate a financial reorganization.

Before 1930 most commissions judged merely the soundness of new issues, scarcely attempting to correct unsatisfactory situations. In recent years various commissions have tried to eliminate overcapitalization before allowing further issues. They often hesitate to prevent re-funding operations if that would mean bankruptcy, in spite of the fact that the continued payment of high interest rates or the persistence of inferior credit standing may be more injurious in the long run than financial reorganization.

During the decade 1920-1930, when numerous holding company systems were put together, state commissions exerted little influence on consolidations and acquisitions of stock. But a few of them, late in the decade and afterwards, carefully studied the prices paid for property and securities.

Purposes of Security Issues

State statutes are sometimes silent about the purposes for which securities may be issued, but sometimes these are stated in fairly specific language. Securities may be floated to reimburse the company only when the expenditure was for a capitalizable purpose. The amount so issued is not measured solely by the increased value of the plant or property. When the depreciation reserve is reinvested in plant, it is measured by the amount set aside for depreciation, less the property retired.

The sale of security issues is usually not permitted to provide work-

ing capital except for the formation of new companies or in reorganizations, even though securities which reimburse the treasury in effect restore depleted working capital. If the purpose of the company is to re-finance short-term indebtedness, the commission is interested not only in the immediate debt but in the nature of the original expenditures.

Maintenance of a proper ratio between funded debt and capital stock is a fundamental principle of sound financial policy. But definitions of what is a "proper" ratio vary. Funded debt creates fixed charges which must be met regardless of fluctuations in earnings, and a company with a high ratio may find itself in serious straits as earnings fall off. In spite of this some commissions have relegated the matter entirely to the decision of management. Others have exercised some measure of control, especially since 1930. Commission opinions of the proper bond-to-stock or bond-to-property ratios have been far from uniform but since 1930 the 60 per cent limit has been fairly common. In the case of bond issues an income coverage of two times interest and amortization requirements is generally considered satisfactory.

Costs of Selling

The terms of securities sales materially affect the costs of capital. Regulation designed to keep costs at the lowest level consistent with the furnishing of service must therefore include control of the issue price and of the underwriting spread. The chief occasion for regulating such matters arises where a utility customarily deals with a single investment firm, or group of firms, and where there may be an affiliation between utility and banker. Only Massachusetts has determined the price at which common stock may be sold but many state commissions have occasionally or regularly fixed minimum bond prices. The price approved by some commissions has been uniformly the same price suggested by the company. Control in these cases would seem to be perfunctory. Until recently few state commissions paid much attention to the cost of selling securities even among affiliated companies.

Since the reasonableness of the security's price is also of critical importance, the utility may be required to submit evidence that the price has been fixed by arm's-length negotiations, or competitive bidding

may be demanded. While most commissions do not require competitive bidding, the practice was long followed in a few states and recently has been extended to others.

Protection of Assets, Investors and Stockholders

The capital of utility companies may be impaired through payment of unearned dividends and inadequate appropriations from income to provide requisite maintenance and depreciation. Control over these matters is also essential to effective financial regulation. During the twenties and early thirties bankers frequently insisted that 12.5 per cent of gross revenues be set aside for maintenance and depreciation; in recent issues, 15 per cent has been a more popular figure. Where this has been done state commissions usually have not scrutinized depreciation charges.

The Federal Trade Commission found that state commissions, in determining rates, generally allowed a sum equal to 2.5 to 3.5 per cent of the fair value of the depreciable property used and useful in the public service. The Commission also uncovered a good deal of laxity among many state bodies in controlling utility depreciation policies. As late as 1937 the depreciation policies of electric utilities lacked uniformity and often the charges against earnings and depreciation reserve varied greatly. More uniformity will in effect be brought about in future by the Federal Power Commission through its prescription of a system of uniform accounts for those utilities subject to its jurisdiction, and by the adoption by many state commissions of the uniform system of depreciation accounting recommended by the National Association of Railroad and Utilities Commissioners.

In recent years provisions in new mortgage indentures and amendments or supplements to existing indentures, designed to safeguard investors, have been tightened under pressure of individual and institutional investors, as well as by the action of regulatory bodies. Commissions generally have not dealt with mortgage indenture provisions but there are important exceptions.

In order to protect preferred stockholders, they are usually granted voting power contingent upon the default of preferred dividends for a given period.

2. FEDERAL REGULATION

The Public Utility Act of 1935 is posited on the inadequacy of state powers. The regulation of the securities of holding companies and their electric and gas subsidiaries is largely under the control of the Securities and Exchange Commission. The Public Utility Act, however, extended the jurisdiction of the Federal Power Commission to security issues, mergers and the sale of property by operating companies transmitting electricity in interstate commerce for resale, and to companies incorporated in one state and operating in another, where the issuing company is not subject to the jurisdiction of any state agency.

But the Federal Power Commission has dealt with relatively few securities cases because many companies subject to its jurisdiction are also subject to the Securities and Exchange Commission as subsidiaries of holding companies. FPC decisions throw little light on its interpretation of the law, but its actions in merger cases indicate duplication, at least to a limited extent, between its powers and those of state commissions.

Congress gave broad authority to the Securities and Exchange Commission over the financing operations of all interstate gas and electric holding companies and their interstate subsidiaries. A holding company was defined as "any company which directly or indirectly owns, controls, or holds with power to vote, 10 per centum or more of the outstanding voting securities of a public-utility company (a gas or electric utility) or of a company which is a holding company"; or any person found to exercise "such a controlling influence over the management or policies of any public-utility or holding company" as to make it necessary or appropriate to regulate it "in the public interest or for the protection of investors or consumers." All holding companies are required to register with the SEC and unregistered companies are forbidden to use the mails, or any instrumentality of interstate commerce, in conducting their business. Certain exemptions are provided.

Powers of the SEC

Congress sought to preserve the authority of state commissions by restricting the jurisdiction of the Securities and Exchange Commission

to fields in which the states had not acted. The SEC must also admit as a party in any proceedings before it any interested state or state commission, and any state or state commissions may obtain a review of any SEC order in appropriate federal courts.

From general purposes and specific provisions of the Act it is clear that Congress intended to prohibit further inflation of utility capitalization by devices such as issuing securities against fictitious or unsound asset values, paper profits from intercompany transactions, or anticipated excessive revenues. The SEC is also granted complete control over the acquisition by companies subject to its jurisdiction of securities or utility assets, or of any other interest in any business, thus promoting the development of integrated public utility systems. To prevent unwarranted write-ups, it has jurisdiction over the accounts and records of registered holding companies, their subsidiaries and affiliates. The composition of corporate capital is made subject to regulation both by specific and general provisions.

Equally unmistakable is the SEC's jurisdiction over the costs of raising capital — fees, commissions or other remuneration in connection with the issuance of securities. Where arm's-length bargaining between utility and banker is absent, the SEC has complete control. Congress also included provisions designed to protect utility assets. The SEC may regulate the declaration and payment of dividends by any registered holding company, or subsidiary thereof, to safeguard its working capital and prevent the payment of dividends out of capital or unearned surplus.

Congress also sought to bring about the equitable distribution of voting power, protection of security holders in reorganizations and simplification of corporate structures. To prevent undue concentration of control, the SEC is empowered: (1) to supervise the growth of holding company systems; (2) to prohibit the issue of nonvoting common stock, preferred stock, debentures, or common stock not having equal voting power with other outstanding securities; (3) to control the composition of corporate capital, and changes in the priorities, preferences, voting power and other rights of security holders. The SEC may pass upon all costs of reorganization, dissolution, liquidation, bankruptcy and receivership, and it is empowered to require each registered hold-

ing company and subsidiary to take appropriate steps to insure that the corporate structure or continued existence of any company in the system "does not unduly or unnecessarily complicate the structure, or unfairly or inequitably distribute voting power among security holders." More than three tiers of companies in a holding company system are prohibited.

SEC Jurisdiction

Since some of the provisions of the Holding Company Act are couched in general phrases, their interpretation by the Securities and Exchange Commission is of great importance.

In deciding what corporations are subject to its regulation, the SEC has taken jurisdiction in the case of a holding company incorporated in a state other than that in which the subsidiaries, or any subsidiary, receive a material part of their income. The Commission has also held that a holding company is intrastate if its interstate operations are merely administrative incidents in the conduct of business otherwise intrastate.

The SEC has frequently had to decide whether a holding company is "predominantly a public-utility company" so as to warrant exemption from the provisions of the Act. As this issue centers about the extent to which the holding company is also an operating company, the Commission generally has compared the book value of the gross fixed utility assets and gross operating revenues of both the subsidiaries and the parent holding company. Exemptions have seldom been granted if the gross operating revenues of the subsidiaries exceeded 10 per cent of the holding company revenues.

In deciding whether a holding company is only "incidentally a holding company" so as to come under the exemption clause, the Commission has held that a company is not entitled to exemption if a material part of its income is derived from public utility subsidiaries — whether distributed in the form of dividends or retained in a surplus account. Holding companies without domestic public utility subsidiaries not only must comply with the provisions of the Act, but each exemption must be scrutinized in the light of the interests of investors and consumers as well as the general public.

A public utility is classed as a subsidiary of a registered holding company not only if 10 per cent or more of its voting stock is owned by the holding company but also if the Commission concludes that the latter, even with a smaller ownership, exercises a "controlling influence" that may prove detrimental to the public interest. "Control," the Commission has held, "includes the power to control," and "subject to a controlling influence," includes susceptibility to domination.

SEC versus State Commission Authority

Certain exemptions in the provision of the Act giving the SEC authority over security issues of holding companies and their subsidiaries — for example those approved by the commission of the state where the company is organized and doing business — were intended to eliminate duplication and conflicts between federal and state bodies. Yet this difficulty has not been wholly avoided, and the SEC's imposition of conditions upon issues already approved by state commissions may constitute unwarranted interference. Where state commissions do not have adequate powers, such conditions may be salutary but if state powers are adequate and state commissions are active, SEC requirements differing from those of the state bodies reflect a difference in point of view which the federal commission might well be reluctant to enforce.

The SEC and state commissions have differed in their views on the appropriate base of total capitalization. Possibly because state commissions are concerned with security regulation largely as incidental to rate regulation, they favor investment cost as the capitalization base. On the other hand, the SEC is largely concerned with the proper relation of a proposed issue to the security structure, the ratio of debt to net property, and the company's earning power. But earning power is primarily dependent upon rates, and the reasonableness of rates depends upon their ability to earn a fair return upon the fair value of the property. If, for example, the SEC accepted the earning power basis, it would have to consider: (1) the earning power of existing rates, (2) what might happen to the rates by action of another commission to which the company might be subject and (3) the effect of probable changes in economic conditions.

Further SEC Policies

Until recently the Commission's decisions indicate little attempt to eliminate write-ups and other improper items from the asset accounts of companies subject to its jurisdiction — a major problem in remedial regulation of capitalization — but it has secured the voluntary elimination of inflationary items from the property accounts of many companies. It is estimated that since 1935 over \$1 billion has been written off the assets of companies subject to SEC jurisdiction but how much of this has been voluntary is not known. In recent cases the SEC has required extensive readjustment of property accounts to eliminate write-ups and similar items to conform more closely to the actual cost of acquisition.

Under various provisions of the Act, the SEC is charged with the "maintenance of competitive conditions." In administering these the Commission has closely scrutinized the relations between investment bankers and utility companies, even in the case of security issues approved by state commissions, which otherwise are largely exempt from its regulation. In April 1941 it promulgated a rule requiring competitive bidding in floating security issues.

In regulating the sale or purchase of utility assets or securities, the SEC has usually regarded the price as *prima facie* reasonable if determined at arm's length in an intersystem transaction. And unless there is suspicion of fraud, it has generally accepted the judgment of the parties as to the probable course of future earnings and the worth of the assets or securities exchanged. In transfers of securities or assets between affiliated companies the SEC has scrutinized book values — on the theory that "a stated purchase price based primarily on an earnings valuation which is far out of line with book values of the acquired property requires particularly careful examination."

Since unearned dividends and inadequate provision for maintenance and depreciation may impair capital, the SEC has paid close attention to these matters. It has adopted rules prohibiting the payment, without its consent, of dividends out of capital or unearned surplus. It has also facilitated its control by prescribing uniform accounting practices for holding and service companies.

These rules are intended to deal with problems in a generalized way;

but, because of the complexity of holding company systems, every transaction presents peculiar problems. The SEC has therefore regulated more by order than by rule. It has generally required that dividends be paid only from valid earned surplus. Large inflationary items in capital accounts, failure to segregate tangible and intangible assets, and a high ratio of fixed charge capitalization have, in some cases, induced the SEC to prohibit the payment of preferred or common stock dividends out of accumulated earned surplus.

Regulation of Security Issues

With increasing frequency the SEC has approved new security issues on condition that the company allow a prescribed sum for depreciation and maintenance charges so long as bonds or preferred stock are outstanding. In most cases 15 per cent of gross operating revenues had to be charged to operating expenses before dividends could be paid on preferred or common stock, or any disbursement to retire stock could be made.

In approving types of securities the Commission has been guided by the Holding Company Act which clearly favors the limitation of securities to secured bonds and common stock having par value. While the Act creates a presumption against preferred stock, common stock without par value, and unsecured debt, the Commission has permitted such issues under special circumstances. In approving security declarations the SEC closely scrutinizes the ratio of bonds, or bonds and preferred stock, to total capitalization and net tangible property, as well as to earning power. It has not allowed fixed interest-bearing securities to be issued when it believed that the fixed charges were inadequately covered. It desires to encourage common stock financing and to discourage the creation of large debt obligations and high ratios of debt and preferred stock.

Until recently the SEC made a distinction between refunding and new money issues, being more lenient to the former. In February 1941 it reversed this policy. It held that, in spite of the improved financial condition resulting from refunding, the full intention of Congress was not carried out when refundings were permitted which did not measure up to the standards set in the Act. "Where corporate debt is exces-

sive," the Commission stated, "and the refunding is accomplished through the sale of new long-term obligations, the issuer perpetuates the two attendant major perils — the necessity of paying it off at some date in the future, and the necessity of meeting fixed charges in the meantime."

Equity Financing and Other Protective Policies

The problem of improving capital structures heavily burdened with debt is related to that of stimulating the flow of equity capital into the utility companies. In informal negotiations and by formal order the SEC has tried to persuade companies to increase the ratio of equity to senior securities. But one of the several obstacles to equity financing has been the inability of many holding companies to finance the purchase of additional common stock of their subsidiaries, or their reluctance to permit the public sale of additional operating company common stocks. Some operating companies were so heavily burdened with senior securities that public sale of common stock was difficult, if not impossible, without recapitalization. Despite such obstacles the Commission has brought about improvements in overburdened debt structures by requiring holding companies to convert open accounts, bonds and preferred stock of their subsidiaries into common stock. Recent decisions of the Supreme Court have fortified this procedure.

The SEC has used several methods to bring about the gradual reduction of excessive debt ratio to total capitalization or net property, including the gradual retirement of debt which public utilities tend to regard as perpetual. It has also sought to improve protective covenants in mortgage indentures, to secure a greater degree of uniformity and simplicity, and to set up gradually increasing safeguards for preferred stockholders, some of which center around voting powers. Probably the greatest disproportionate allocation of voting rights occurs when the common stock continues to control the company even though dividends on the preferred are substantially in arrears. The Commission requires preferred stockholders' approval to mergers and consolidations, and their consent by at least a two-thirds vote to the authorization of any class of stock which has preference as to assets and dividends over existing preferred securities. In certain cases the Commission has imposed

restrictions on the payment of common stock dividends in order to maintain, or to build up, the equity cushion.

In dealing with reorganization or recapitalization the SEC has rendered decisions under various provisions of the law. The law requires that before approving a recapitalization plan the Commission must find it "fair and equitable." In interpreting this phrase the Commission has followed the U.S. Supreme Court holdings in recent cases that junior interests are precluded from participation in a reorganization plan until senior interests have been made whole. This is the so-called "absolute priority" rule, as distinguished from the doctrine of "relative priority" which had formerly been followed in some lower federal courts.

The Commission seems to be prepared to take drastic action to compel registered holding companies and their subsidiaries to make their corporate structures conform to the requirements of the Holding Company Act. Most of the recent orders involve only preliminary steps and further action will be demanded of certain companies. Moreover, since all reorganizations must conform to SEC requirements in bringing about integrated systems, the final form of corporate reorganizations must await the Commission's further actions.

3. SUMMARY AND APPRAISAL

Regulation by the Federal Power Commission

The work of the Federal Power Commission must be evaluated in the light of its limited jurisdiction. It has control over the amount and character of the securities of its licensees and their customers only where the states have not established commissions to regulate securities, or cannot agree about the amount and character of the securities to be issued. Even though few securities cases have come before the FPC, this does not relieve the Commission of the responsibility of developing a policy. The FPC seldom supports its decisions by argumentative opinions and consequently its staff and those subject to its regulation receive little guidance.

Policies of the Securities and Exchange Commission

Different conclusions emerge from a study of the Securities and Ex-

change Commission. The law under which it operates is specific, and definite standards have been set up although much is left to the Commission's discretion. In interpreting the law the Commission's decisions frequently have not been unanimous and dissents have been vigorous. Even the majority points of view have changed. For example, after long distinguishing between refunding and new money issues, the SEC recently declared that a dual standard did not fully carry out the main purposes of the Act.

SEC policies, like those of other regulatory bodies, have been developed empirically. Changes and modifications have been adopted as experience dictated. The Commission's principal problem is to prevent overcapitalization: to forbid the issuance of securities based upon "fictitious or unsound asset values having no relation to the sums invested in or the earning capacity of the properties," whether they are based upon "paper profits from intercompany transactions," or "in anticipation of excessive revenues from subsidiary public-utility companies," or which subject operating companies "to the burden of supporting an overcapitalized structure and tend to prevent voluntary rate reductions."

Since most issues before the Commission have involved refunding, and since, until recently, the Commission has been lenient on the ground that any improvement of a bad situation is a step in the right direction, it has not done all that it might to correct overcapitalized situations. It has taken the position, following its interpretation of Supreme Court precedents, that current and future earning power furnishes the best basis for total capitalization. But mischievous and vexatious situations can arise if such a base is the sole criterion. The base for capitalization need not be the same as that for rate-making purposes, for instance, but unless the two are brought into conformity, much dissension may arise between the SEC and rate-making bodies.

Opportunities for conflict between the SEC and the rate-regulating bodies arise over depreciation charges. The rate-regulating bodies are primarily concerned with depreciation charges as operating expense, although they must also be concerned with accrued depreciation as a deduction in determining the rate base. The SEC is concerned primarily with the integrity of the asset accounts and the necessity of preventing

the impairment of capital in the interests of investors. These views are far apart but there seems to be little excuse for different treatment of depreciation on the same piece of property. The rate-regulating authorities are attempting to bring about uniformity by straight-line depreciation accounting, and since state commissions are giving more consideration to depreciation than ever before this work should be respected by the SEC.

Another important development has been the SEC's effort to prevent excessive debt ratios. While practical considerations make it impossible to enforce an ideal ratio, the Commission has indicated that it considers an ideal capital structure to be one of not more than 50 per cent bonds and 50 per cent common stock. Determination of a proper debt-to-stock ratio in the total capitalization is subject to many considerations. A low ratio may be excessive if the company is overcapitalized and the debt represents a large proportion of depreciated assets. On the other hand, a moderately high ratio may not be dangerous if the company is conservatively capitalized and the interest charges are well covered by earnings. Since the ratios of various types of securities have a substantial effect on the annual cost of capital, the optimum capital structure for a given utility can be determined only by experience.

Competitive Bidding and Other Requirements

The Commission's requirement of competitive bidding for new issues — severely condemned by investment bankers — is designed to reduce flotation costs and to eliminate direct negotiations between a utility and affiliated banking interests. Available evidence indicates that companies receive more for their securities under competitive bidding than by direct negotiation. Yet an investment banking industry has to be kept alive to tap all potential sources of capital, even though large insurance companies can, if they choose, underbid banking syndicates.

With SEC guidance and approval much has been accomplished voluntarily by utility companies in simplifying their corporate structures. In striving for simplification the Commission has shown neither excessive rigidity nor undue haste. It has approved various company plans which seemed reasonable and steps in the right direction. Also it

has not ordered drastic action but allowed step-by-step procedure.

It has been difficult for the SEC to assume proper regard for the interests of both consumers and investors. In refunding operations, constituting the bulk of the transactions which have come before it, the Commission's emphasis upon earning power previsions future rate policies over which it has no control. It also has insisted that companies with high debt ratios use the major portion of the savings from refunding to reduce funded debt and increase earned surplus. This raises the question of whether the financial house cleaning should be undertaken at the expense of the consumer.

Need for Unified Federal Policy

Harmonizing regulating bodies is but a part of the larger problem of harmonizing financial regulation which Congress divided between the Federal Power Commission and the Securities and Exchange Commission. Even though the FPC has dealt with securities in only a few cases, differences of view have appeared and may increase if the FPC lays chief emphasis on its rate-regulating powers. The need for unification of federal control is obvious.

The SEC has cooperated with the state commissions on matters of mutual interest. The work of the SEC has been distinctly helpful to some of the state agencies, since many operate under weak and inadequate statutes or without adequate technical staffs. The passing of companies from the jurisdiction of the SEC to the state commissions may therefore have mixed results. Where state commissions are strong and statutes well drawn, regulation may be improved through unification of rate and financial regulation; where companies are located in states without commissions or the machinery for effective regulation, the reverse may be true.

Effect of Holding Company Act on Flow of Capital

It is difficult to prove or disprove the common assumption that the Holding Company Act as administered by the SEC has retarded the flow of capital to the electric utilities. New issues offer no guide to the inflow of capital because, since 1935, investment has been made in considerable quantities out of depreciation reserves. Also, many refunding

issues have been floated. According to data presented to the Temporary National Economic Committee, expenditures for plant and equipment by private and municipal electric companies declined from \$855 million in 1930 to \$120 million in 1933, then rose to \$403 million in 1938. Securities issued for new capital by electric holding and operating companies declined from \$895 million in 1930 to \$7 million in 1933 and \$2 million in 1934, rising steadily thereafter to \$123 million in 1938. In recent years depreciation reserves have been increased owing to the requirements of both federal and state commissions, and this is reflected in the greater investment out of reserves. In spite of the unsatisfactory scarcity of new common stock issues, the fact that many companies have been able to refund bond issues advantageously in recent years reveals investors' confidence in the industry.

Chapter 6

REGULATION OF MARKET AREA CONTROL

THE INVESTIGATION OF HOLDING COMPANIES towards the end of the twenties raised three questions: 1. Were private systems in the electric power industry larger than was necessary for economy? 2. Apart from their size were they economically designed? 3. Were the systems so large as to frustrate state regulation and wield excessive political power? The present chapter attempts answers to these questions as they are reflected in regulation by government agencies.

The state commissions vary widely in the attention they have given to the distribution of market territory between utilities. All may require a utility to extend service to any point within the area covered by its franchise. But their principal powers relate to extensions into unoccupied zones and the unification of control over independent territory.

Twenty-six commissions have power to allocate to utilities territory for which no franchise has been granted, but some of them may act only where there is competition for territory. Allocation of territory by private agreement is permitted in most of these states, provided the agreement is approved by the commission. In thirty-two states entry into new regions is made conditional upon the issuance of a certificate of convenience and necessity; and thirty-four state commissions may order interconnection between utilities.

Most state commissions now have authority over the concentration of control over systems already set up. For example, thirty-four of them regulate mergers and consolidations and most of them control the lease or sale of facilities, reorganizations and security issues. In thirty states contracts with affiliated interests and payments made to them must have commission approval; in twenty-five states loans to affiliates are regulated; in twenty-eight of them commissions may control purchases of the voting stock of one utility by another.

On the other hand, little is known about the policies of the state commissions in granting certificates of convenience and necessity and otherwise determining the allocation of unoccupied territory. Boundaries appear often to have been drawn as a consequence of gradual extensions from urban centers rather than according to a comprehensive plan. With the exception of California none of them has formulated a plan for the division of market territories.

State Regulation of Corporate Structures

Policies of state commissions in controlling the unification of market areas through mergers, and through purchases of property and securities, are somewhat clearer because these matters are the subject of formal decision. For instance, commissions have approved mergers which financially strengthen one of the companies involved but have forbidden acquisitions of securities or property which impair or fail to improve the credit of the parent company. Some commissions have encouraged the simplification of intercorporate relations, and the New York commission has refused approval to mergers which would create unnecessary intermediate holding companies. Although primarily concerned with economies in financing, commissions have taken account of probable economies in management, more efficient use or planning of plant facilities, centralized purchasing, or the elimination of intercorporate dealings.

Even before 1930 commissions occasionally objected to the mere size of consolidated companies. But they rarely investigated in advance the avowed economies of unification, or considered other mergers which would yield greater savings, and none has attempted to bring about the creation of companies of optimum size. The New Hampshire commission, however, has recently indicated that proposed mergers will be considered in the light of their ability to furnish economical service to the state as a whole, and the New York commission in 1936, announcing criteria of a desirable unification, stated that properties should be "integrated and logically . . . contiguous" and should lie within the state boundaries.

Some commissions have taken account of the effect of mergers on the effectiveness of state regulation. New York, for example, has held

that "mere size is a handicap to regulation" because it increases the difficulties of property valuation, and President Franklin D. Roosevelt, when Governor of New York State, drew attention to the political influence of the electric utilities and attacked their "lobbying activities."

Federal Utility Legislation

Towards the end of the twenties, when Congress began to investigate the growth of holding companies, it became clear that control over a large proportion of the electric power industry had fallen into the hands of a few concerns. The main fiscal functions claimed for holding companies were assistance in the financing of utilities in small cities and rural communities and the provision of funds for senior security financing of operating companies when security market conditions were unfavorable for public sales. Other functions performed by holding companies for their operating subsidiaries have been engineering, construction and managerial. It has been claimed also that holding companies have proved useful in the integration of operating companies, since only through complete physical coordination can the full benefits of regional operation be brought about.

Many of the advantages claimed for holding companies doubtless rest upon sound economic ground but these advantages have not always been realized. The Federal Trade Commission has disclosed many cases in which holding companies rendered little financial assistance to their operating companies and in which the earning power and credit of the operating companies were exploited to sustain an unwieldy, overcapitalized superstructure. Management services have been of value to the operating companies but charges have often been so exorbitant as to nullify any savings to the companies or their customers. Many holding company groups were designed to further the financial purposes of their promoters and not to secure the economies of unified operation.

The Public Utility Holding Company Act of 1935 dealt specifically with many abuses. The relationships between holding and operating companies, as well as the organization and make-up of holding company systems, have also been subjected since then to regulation in the public interest. Congress and the Roosevelt Administration were impressed with the economic and political power resulting from concen-

trated control of electric and gas utilities. Through widespread use of propaganda and even corruption of commissioners and legislators, many companies had effectively hampered regulation. The willingness of holding company interests to use all possible means to combat antagonistic legislation was shown during the debates in Congress on the Holding Company bills. But in spite of this opposition the law was passed.

Congress attempted in the Public Utility Holding Company Act, as in the Federal Power Act of 1935, to minimize interference with state control of market areas. As in the case of rates and service regulation, the Securities and Exchange Commission must exempt from the provisions of the Act holding companies and subsidiaries predominantly intrastate or predominantly operating companies whose operations "do not extend beyond the State in which [they are] organized and States contiguous thereto." Thus a holding company may operate in a number of adjoining states and yet be outside the supervision of the Commission. But the Commission must refuse exemption if it "finds the exemption detrimental to the public interest or the interest of investors or consumers." SEC approval of the acquisition of securities or utility assets by a registered holding company or subsidiary is not required if it has been expressly authorized by the state commission.

The SEC is directed to determine how far each holding company's structure may be simplified, its voting power fairly and equitably distributed, and its properties and business confined to those "necessary or appropriate to the operations of an integrated public-utility system." An integrated electric utility system is defined as "a system . . . of one or more units of generating plants and/or transmission lines and/or distributing facilities, whose utility assets, whether owned by one or more electric utility companies, are physically interconnected or capable of physical interconnection and which under normal conditions may be economically operated as a single interconnected and coordinated system confined in its operation to a single area or region, in one or more States, not so large as to impair (considering the state of the art and the area or region affected) the advantages of localized management, efficient operation, and the effectiveness of regulation."

The famous death sentence clause of the Holding Company Act

[Section 11] directed the Securities and Exchange Commission, as soon as practicable after January 1, 1938 and after giving an opportunity for a hearing, to order the operations of each registered holding company and its subsidiaries to be limited: (1) to a single integrated public utility system and (2) to other businesses reasonably incidental or economically necessary or appropriate to the operation of that system. Any registered holding company or subsidiary was permitted to present to the Commission plans for such compliance. If voluntary compliance could not be secured, the private systems were ordered to comply with the Commission's orders within one year, unless an extension of time were granted. The Commission could apply to a court to enforce compliance. The court could take possession of the companies and their assets and could appoint the Securities and Exchange Commission sole trustee with power to dispose of the property under court direction.

Federal Power Commission Regulation of Market Areas

In its administrative policies the Federal Power Commission has dealt with various aspects of the problem of market areas. It has approved a number of transfers of facilities which do not affect rates adversely or obstruct "the integration or coordination of facilities" under its jurisdiction. It has approved a sale of facilities not interconnected with other operating subsidiaries of a holding company, and where interconnection was not economically feasible. It has also consented to the transfer to the parent company of the properties of wholly owned subsidiaries where the facilities were "interconnected, integrated, auxiliary and complementary." It has refused to approve a transfer in which the purchaser would acquire a small system widely separated from any other properties of the holding company.

The Federal Power Commission has also approved the sale of properties to public agencies where these would provide the Tennessee Valley Authority "with a large concentrated market for its surplus energy and . . . provide for the integration of its transmission facilities and the integration and coordination of its facilities with facilities subject to the jurisdiction of the Commission."

One section of the Federal Power Act empowers the Federal Power Commission "to divide the country into regional districts for the volun-

tary interconnection and coordination of facilities for the generation, transmission, and sale of electric energy"; and imposes upon it the duty "to promote and encourage such interconnection and coordination." Another section provides that in time of war, or whenever the Commission determines that an emergency exists, it may require temporary connections of facilities and such generation, delivery, interchange or transmission of energy as will best serve the public interest.

On June 28, 1941 the Commission declared a power emergency in the southeastern United States, and on July 1 ordered a series of interconnections in order to bolster the power supply for essential defense industries through a seventeen-state power pool previously initiated by the Commission. The interconnections tapped generating resources from Florida to Illinois, and from Texas to Virginia, making available an estimated additional capacity of 200,000 kilowatts. On December 16, 1941 the Commission declared an emergency in northern Virginia and ordered an interconnection between the facilities of the Potomac Electric Power Company and the Virginia Public Service Company. (See also Chapter 11, page 200.)

SEC Policies on Size and Market Areas

The Securities and Exchange Commission is directed by law to approve the purchase of utility securities and assets only if it contributes to the "economical and efficient development of an integrated public-utility system." The Commission holds that "any acquisition which makes for the economical development of the property acquired as an efficient and self-sustaining operating unit or system" may be regarded as tending towards the purpose of the law. But in practice this has not been easy. For example, it disapproved, at least in principle, a purchase of securities and assets where the company to be acquired was so isolated, physically and financially, from the acquiring system that it could not be considered a part of it according to the integration provisions of the law. But because of special circumstances, it permitted the temporary acquisition of the properties.

It is hard enough to regulate proposed changes in the control of market areas but it is far more difficult to reverse undesirable develop-

ments which have already taken place. How difficult is evident from the fact that, as of June 30, 1941, there were 147 registered holding companies which were subject to the Commission's jurisdiction; the 53 separate holding company systems into which the Commission has classified them include 1,457 holding, subholding and operating companies, with assets of \$15.1 billion. And the largest system, with total assets in excess of \$2 billion, operates utility properties in thirty-two states and many foreign countries.

The Commission has to make up its mind as to the most economical size for a system, since the law requires that an "integrated system" shall be capable of economical operation and shall not be so large as to impair efficient operation. But the most efficient size in terms of sales or area served varies widely in different parts of the country. For instance, economical operation depends in part on the efficiency of the arrangements for purchasing power at wholesale. Where distribution systems can buy power at prices which cover only the cost of economical generation and transmission, they can confine their service to economical distribution. Little if any economy is gained in cases like this by organizing distribution on a very large scale.

Economies in construction which have been alleged to justify large organizations seem less likely to play an important part in the future as construction methods are standardized and as the growth of urban population falls off. Some holding companies claim that cheap power, as well as cheap managerial and engineering service, can be obtained only from organizations under the same control as the distributing company. They believe that a permanent relationship between the service and operating organizations is necessary to conserve the experience of the staff and creates an esprit de corps which cannot be achieved in a hired consulting company. But whether these advantages are obtained solely from affiliated or subsidiary service companies is a moot point.

If distribution is not to be separated from power production, the most economical size of utility systems will have to be determined by the size of the wholesale power market. If each electric system were practically independent of the others, the lowest costs would probably be obtained from a few very large systems. Only such systems can plan

economical transmission for wide areas and obtain all the economies in generation.

The same principle applies to the layout for transmission systems. If the boundaries between two systems are poorly drawn a duplication of facilities results. The savings from a well-planned layout provide an incentive for a more economical location of boundaries and the exchange of power between transmission systems. But difficulties of operation increase as the network is extended and ultimately these counterbalance the economies.

Large systems obtain economies in generation by utilizing and interconnecting large generating plants. Maximum economies of generation appear to be achieved in plants with a capacity of about 150,000 kilowatts. But against the economies of larger-scale generation must be set the additional cost of transmitting energy over a wider area. Interconnection permits plants with low operating expenses to be run at a fuller load for longer periods, while the less efficient plants carry only the peak loads. Furthermore, if a plant can take power from a neighboring plant, less stand-by capacity is needed.

The most striking economies of interconnection come when hydroelectric plants are included in a system; and, as a rule, water power can be most effectively used when coordinated with steam plants. In both steam and hydroelectric systems fairly large-scale generation is most economical, but even in the case of large systems further economies can be obtained by interconnection.

Until large areas of sparse population are reached, economies are usually obtained by further interconnection at the boundaries of market areas. If the Securities and Exchange Commission concluded that economies could be obtained only by common ownership, economical systems would be very large; if they can be effected by interchange of power, the economical generation unit may be a single plant. The Commission must, therefore, judge the probable efficiency of wholesale power contracts and the effect upon them of the regulation of interstate wholesale rates and the coordination of facilities. If the present condition of the wholesale power market is accepted by the SEC, it may fail to adjust present units to the most economical system for the country as a whole. (See Chapter 11, pages 196 ff.)

Enforcing the "Death Sentence Clause"

The Holding Company Act required holding company systems to be adjusted as soon as practicable after January 1, 1938, but in November 1935 the Securities and Exchange Commission postponed its preparations to apply the law until the constitutionality of its registration provisions was determined. In March 1938 these provisions were upheld by the Supreme Court.

The Commission believed that enforcement of the law was "a task of great magnitude" and that "its most expeditious accomplishment turns upon the willingness of the industry voluntarily to take the necessary steps." It proposed, therefore, to "give each holding company every reasonable opportunity to effectuate the Section 11 (b) programs by voluntary proceedings" and to institute involuntary proceedings "only as a last resort or where the exigencies of special situations make such a course desirable or necessary." This policy proved a failure, and in February 1940 the Commission instituted involuntary proceedings. It has issued notices to nine holding company systems with total assets of \$8.4 billion, or 58 per cent of the total consolidated assets of all systems registered with it. Some orders have been entered and in other cases proceedings have reached the stage of order.

The Commission's first task is to determine what is a "single integrated public-utility system" for every holding company. It has already held that the Act does not permit the combination of gas and electric utility properties in a single integrated system. The different nature of the properties and requirements prescribed preclude the possibility of including the two in one system. Integrated systems are to be judged not only in terms of economical size but whether they are so large as to impair the advantage of localized management or effective regulation. How large a system may be before it becomes uneconomical to operate and before it impairs localized management and effective regulation, cannot be determined from SEC decisions.

In the *United Gas Improvement Company* case the Public Utilities Division of the Commission confined the system to the electric utilities operating in the Philadelphia area (with properties in Pennsylvania, Maryland and Delaware) and stressed the fact that their location in a relatively compact part of the country, with the holding company situ-

ated in the most populous portion, permits their operation as a coordinated unit. The Division held that economies are possible by utilizing common directing and servicing personnel in a relatively unified area. The Division said that "the physical location of the holding company offices and the offices of the major executives in the very territory constituting the principal operating portion of the area and the common characteristics of the operating problems in the coordinated portions of the area give reasonable assurance that such a combination of utility facilities and operations need not impair the advantages of localized management." It has pointed out in another connection that the general headquarters for 54 public utility systems, comprising 666 electric and gas operating companies, are located in 17 cities; the headquarters of 52 per cent of the systems being in New York, Jersey City and Newark.

In another case, where properties were 300 miles apart and separated by nonsystem companies, mountain ranges and stretches of relatively uninhabited territory, the SEC held that physical interconnection was impossible and therefore that the properties could not be part of a single integrated system.

In a report on the Commonwealth & Southern Corporation, the Public Utilities Division of the SEC considered the matter of size as applied to the northern and southern properties. The Division held that the Consumers Power Company was so large and its distance from the other Commonwealth & Southern properties in Indiana and Ohio was so great that if it were combined with the latter under common control it would probably be so large, both in geographical area and scope of operations, as to impair the advantages of localized management, efficient operation and effective regulation. As for Commonwealth & Southern's southern properties, which are interconnected, the Division held that these did not meet the standards as fixed in the Act defining a single integrated system. They extended over approximately 500 miles from east to west and 300 miles from north to south, the service area covering some 111,000 square miles with a population of approximately 5.3 million.

The Commission, as has been earlier pointed out, must require holding companies to limit themselves to one or more integrated public utility systems and other businesses "reasonably incidental or economi-

cally necessary or appropriate" to its operations. It takes a narrower view of this requirement now than it did in 1937. In that year it permitted a company to retain water, coal and appliance sales companies, as well as its electric railway, bus transportation and bridge companies. In the case of the United Gas Improvement Company, the Commission tentatively concluded in 1941 that the portion of the Act concerning businesses reasonably incidental to the operations of the integrated system applies also to "investment interests" in nonsubsidiary utilities.

The Act provides that the Commission shall permit a registered holding company to continue to control one or more additional integrated systems if it finds that:

(A) Each . . . cannot be operated as an independent system without loss of substantial economies which can be secured by the retention of control by such holding company of such system;

(B) All of such additional systems are located in one State, or in adjoining States, or in a contiguous foreign country; and

(C) The continued combination of such systems under the control of such holding company is not so large (considering the state of the art and the area or region affected) as to impair the advantages of localized management, efficient operation, or the effectiveness of regulation.

These are separate standards and a system may not be retained if it fails to meet any one of them. The Commission's strict interpretation of clause (B) suggests the possibility that it may not be necessary in some cases to discuss the application of clauses (A) and (C).

The steps a company may take to comply with Commission orders to divest themselves of their properties are not matters solely of their own choosing, since the SEC must protect the public interest and that of investors and consumers. But various workable methods have been found. One is the public sale of the common stocks of operating companies held by holding companies. This method has been employed in some cases. The cash thus received has generally been used to retire senior securities of the holding company or to strengthen the remaining operating companies in the system. Another method is the exchange or sale of utility securities or assets between holding company systems or with independent operating companies, where the transferred property is capable of physical integration with adjacent properties.

Summary and Appraisal

In general the utilities have taken the initiative in selecting markets. Boundaries have often been drawn as a result of systems expanding from neighboring centers of population until they met. In the main direct competition involving lines along identical routes has been avoided. Little is known about the economies of distribution systems thus laid out by private initiative, or whether rural and urban areas have always been economically combined. Few, if any, state governments have even investigated these problems.

State regulatory commissions, in general, have acquiesced in prearranged plans. They do not appear to have investigated the alleged savings or inquired whether other combinations would yield greater economies. Congress also failed to act when large-scale mergers were taking place in the electric power industry. When it finally acted in 1935, it authorized the Federal Power Commission and the Securities and Exchange Commission to regulate changes in property control. But the major problem was to remedy the past excessive and uneconomical concentration of control — a task placed on the shoulders of the SEC. Since Congressional policies are briefly expressed in the Holding Company Act, much room has been left for SEC interpretation.

The tests of an integrated system are perhaps inevitably vague. Congress required that such systems should be physically interconnected or "capable of being interconnected." But it is not clear whether an integrated system must consist of a continuous area which may be interconnected, or discontinuous areas capable of physical interconnection.

An integrated system must, "under normal circumstances be capable of economical [operation] as a single interconnected and coordinated system." But Congress did not define the standards of economical operation, and it is not clear whether this phrase requires a system to be large enough to permit the most economical operation, or whether something less than maximum economy will suffice. An integrated system may not be so large as to impair "efficient operation," "localized management" and "effective regulation." The SEC must decide how much weight should be attached to each of these tests, and which to choose when they conflict.

The law does not give the SEC adequate power to rearrange the market areas of private utilities. The SEC can decide which parts of a system should be pruned off but it cannot fully control the disposal of the rejected parts.

By defining an integrated electric utility system as including "one or more units of generating plants and/or transmission lines and/or distributing facilities," Congress has permitted the continued operation of all three functions in a single integrated system. The provision for more than one integrated system in a holding company is vague and without adequate justification.

SEC Problems and Policies

The onerous task of adjusting existing market areas was passed by Congress to the Securities and Exchange Commission, doubtless because the SEC was regarded as best equipped to deal with the financial questions involved. But serious engineering problems must also be faced. Because the Federal Power Commission has for some years been investigating the efficiency of the national power system, especially the adequacy of interconnections, explicit arrangements might well have been made to draw upon its experience.

The statements of the SEC and the conclusions of its Public Utilities Division imply that so far as electric utilities are concerned, a single integrated system must be "physically interconnected." Nowhere is there any indication that the phrase "capable of physical interconnection" will be given substance in the Commission's interpretation. Nowhere are the standards set forth which guide the Commission in determining how large a system should be for economical operation. Furthermore, the Commission has given only general clues in determining the advantages of localized management and effective regulation. The restrictive character of the Commission's interpretations are most apparent in dealing with the retention of additional integrated systems by a holding company. It has held that additional systems must be in the same state or adjacent states — the "single area" principle. This is a possible interpretation, but the purpose of the original bill might be carried out through rigid interpretation of clauses (A), (B) and (C) of Section

11 (b), cited on page 95. Whether this is the SEC's purpose, cannot be told with certainty at this time, although some of its actions seem to indicate it.

The breakup of certain existing holding company systems is not only necessary under reasonable interpretation of the law but it is also imperative for the solution of corporate problems. Perhaps the most important problem is to devise methods of bringing about the necessary readjustments without the sacrifice of real values.

The SEC has taken no stand regarding the best method of reorganizing holding company systems when they are reduced in size. Presumably the initiative will be left to the management of the systems. Difficult problems will inevitably arise when attempts are made to appraise the relative interests of different groups of security holders in distributing the securities of subsidiary companies or the proceeds of their sale. But if the evil is real, its removal should not be postponed because it is painful and difficult.

Chapter 7

MUNICIPAL OWNERSHIP AND OPERATION

MUNICIPAL OWNERSHIP of electric utilities dates from the beginnings of the industry. At one time or another four thousand cities, towns and villages in the United States have supplied electric service to their citizens. Statistical measures fail to reveal the full significance of this form of public enterprise. Municipal systems have influenced the rates and policies of private companies through the threat of competition or condemnation. Even when they offer no direct competition they have nevertheless tended to exert a downward pressure on rates. (See page 108.)

1. IMPORTANCE AND RELATION TO OTHER SYSTEMS

By 1882, the first year of central station service, four municipal electric systems were in operation. The number of municipal systems reached a peak of 2,581 in 1922, declined in the next decade and then increased 3.2 per cent between 1932 and 1937. The upward trend has since continued. Private utilities meanwhile reached a peak in 1917. Since 1927 more than half of the number of electrical systems have been municipally owned.

Yet municipal utilities produce only a small part of the nation's supply of electricity. In 1937 they served only 9.8 per cent of the consumers, sold only 4.8 per cent of the energy and owned only 6.9 per cent of the generating capacity. Although 58.2 per cent were located in the east and west north central regions, the Pacific states led the country in the amount of energy sold by them and in the number of customers served.

The average private utility system serves fourteen times as many customers and sells almost twenty-three times as much energy as the average municipal system. Privately-owned utilities in 1937 had an av-

erage value of about \$9 million and corresponding municipal systems of less than \$400,000. Private systems dominate in the more thickly populated industrial areas while municipal systems usually serve a single community.

Changes in technology have influenced both of them. For example, a rapid shift from generation to purchase of electricity occurred between 1922 and 1927, a period of sharp decline in the number of both types of establishments. In 1927, 49 per cent of municipal and 43 per cent of private utilities purchased all the power they sold. By 1937, 52.4 per cent of municipal and 39 per cent of private enterprises had become purchasing systems.

The larger municipal utilities usually generate power while the smaller purchase it. In 1937 almost half (47.6 per cent) of the municipal systems generated power, accounting for 60.8 per cent of the total municipal output. The average size of municipal generating systems has increased, owing both to expansion and the dismantling of small generating plants. But the average generating capacity of municipal systems was less than one tenth of that of private systems in 1937. This output of electricity was largely generated by steam.

Federal Encouragement of Municipal Ownership

The growing importance of municipal systems in recent years reflects both changes in the public attitude toward the regulation of private utilities and the encouragement given to public ownership by the development of a federal power policy.

The financing of public works and the development of large power projects by the federal government have stimulated the growth of municipal systems. The Public Works Administration, established in 1933, was authorized to allot funds for federal power projects and to make grants and loans to states and their political subdivisions for power purposes. While the PWA did not initiate municipal power projects, it offered to finance them. It was limited by law to grants of not more than 45 per cent of the total cost of the projects. Because of the financial condition of most local governments in 1933-1934, however, it offered to lend them at 4 per cent any balance needed. Later, when the market for municipal securities improved, grantees often

had recourse to other sources of funds than the PWA.

The Public Works Administration allotted funds for additions and improvements to existing municipal utilities and for the construction of new plants. It did not finance the municipal purchase of existing private facilities. From 1933 to 1939 the PWA received 1,813 applications for funds for nonfederal power projects, chiefly from the west and east north central and the three southern regions. Relatively few came from New England, the Middle Atlantic and the Pacific states. Up to March 1, 1939 it had made 319 allotments to municipal power projects, amounting to \$56.5 million. These grants, plus \$43.4 million added by the applicants, built almost \$100 million of new construction.

During its first two years the Public Works Administration used its power to finance competing municipal plants to force reductions in private rates. In the view of Secretary Harold L. Ickes, rate reductions were one of the most important indirect accomplishments of the PWA. This bargaining policy, bitterly opposed by the privately-owned utilities, was abandoned in 1935. Thereafter the Public Works Administration made allotments to municipalities wherever it considered the projects technically, legally and financially sound.

Federal Power Priorities and Aid

When Congress provided for the sale of power generated at federal dams in the Tennessee Valley, at Bonneville (Oregon) and at Fort Peck (Montana), it gave priority in the purchase of current from them to states, counties, public power districts and nonprofit cooperatives. The Bonneville Administrator was directed to earmark until January 1, 1942 at least 50 per cent of the energy produced at Bonneville for the use of public bodies and cooperatives. The Tennessee Valley Authority and the Bonneville Administrator have encouraged the establishment of public distributing systems in their respective regions. The TVA has also purchased private systems for its own account and for municipalities and other public agencies. As a result of these purchases by June 30, 1940 almost all distribution and transmission facilities in the Tennessee Valley were being operated by public authorities, and the TVA was selling power to seventy-four municipalities and thirty-two cooperatives.

Municipal purchases of private distribution systems in the Tennessee Valley have been financed largely by the sale of revenue bonds. The federal government has been only a minor source of funds.

The Tennessee Valley Authority assists municipalities in sales promotion work, power accounting and engineering. Its contracts with public distributors set both wholesale and retail rates and govern their accounting and financial practices. (See Chapter 10, pages 175-176, 179-181.) Municipalities agree to operate electric service separately from other municipal functions, primarily for the benefit of the rate-payers, without loss or profit except for a 6 per cent return on city equity. In the Bonneville contracts the parties pledge themselves to similar provisions.

Public Power Districts

Public power districts have been set up in some states in place of, or in addition to, municipal systems. The first state to authorize public power districts primarily for electric power (sometimes called public utility districts or people's utility districts) was California in 1913. Arizona, Nebraska and Montana followed in 1915, with a lull until Michigan authorized utility districts in 1927. By 1940 eighteen states and one territory permitted them. Public power districts are political subdivisions of the state, usually embracing an area larger than a single municipality and including both incorporated and unincorporated territory.

State laws enacted before 1930 generally require a popular petition or a resolution of local governing bodies before steps can be taken to organize a district. After official hearings the project is then voted on by the residents of the proposed area. Legislation passed since 1933 provides for a greater degree of state supervision in the organization of the districts. A review of the proposal is often required to make certain it is in the public interest and is likely to be self-supporting. Directors of the districts are usually elected, but some recent laws provide for their appointment by the governor.

All districts have the usual legal attributes of corporations, although their powers differ in important respects. Older laws granted them the right of eminent domain, power to tax and sometimes to levy special

assessments and to incur indebtedness. Taxpayers are usually protected by a requirement that general obligation bonds shall be issued only with the approval of the electorate. Recent laws prohibit the levy of taxes or limit their amount; but, as an offset, they often permit the issue of revenue bonds without the approval of the voters.

While public power districts have been given some of the advantages of private enterprises, their traditional privileges and powers as public bodies have been restricted. Recent laws require some of them to pay taxes on all or part of their electric property and operations; many districts are required to charge rates sufficient to meet all obligations; some have their accounting methods and security issues regulated by the state; others are required to attempt to purchase rather than to duplicate private lines and facilities.

The number of public power districts in the United States cannot be stated accurately. At least sixteen were in operation and twenty-two were being organized at the end of 1936, almost all of them in Nebraska, California, Oregon and the state of Washington. Since 1936 others have been created, chiefly in the same four states, but their total number is still relatively small in the country as a whole. Statutory provisions give opportunity for political and legal obstruction, and opposition to power districts has arisen where statutes allow issues of general obligation bonds only and permit the collection of taxes. Also, the need for these districts has lessened with the rapid increase in rural cooperatives (financed, like some of the power districts, with loans from the Rural Electrification Administration) and the extension of rural lines by private companies.

It is too soon to appraise the achievement of public power districts. Some of their shortcomings are already emerging, such as friction between legally independent, but economically related, districts and between the districts and municipal authorities. Yet the public power districts in Nebraska, for example, provide effective organization in a state where public generating and distributing facilities would otherwise be limited to small municipalities. Irrigation districts in California, operating since 1922, have provided cheap electricity and complete rural service, met all their financial obligations and used electric revenues to reduce the cost of irrigation. In Oregon and Washington re-

cently organized public power districts will purchase energy from the Bonneville Power Administration. The test of their efficiency will therefore be in distributing rather than generating power.

2. EFFECTS OF MUNICIPAL OPERATION

Municipal operation may threaten either the present or potential markets of private utilities. Private interests seriously object to municipal operation if it displaces them from markets already developed. So far comparatively little of this has occurred. Between 1882 and 1927 most municipal systems were operating in communities never before served by private companies.

Between 1937 and 1939 the number of communities served exclusively either by publicly-owned utilities or by private companies showed about the same increase — 8.3 and 8.5 per cent, respectively. How many of the additional public systems displaced private enterprises is not known. Since 1938 some displacement has occurred, as in the Tennessee Valley, but municipal activity has been expanding in distribution rather than in generation. In fact, until recently private systems were displacing municipal generating plants.

When a municipality decides to displace a private electric company, it is not legally obligated to buy existing facilities in the absence of a statutory requirement, a franchise or a contract. In all states municipalities may acquire existing private plants but only in a few states must they do so. Compulsory purchase statutes date from the Massachusetts law of 1891. Several other states have set up similar legal obstacles for municipalities which seek to supply their own electric service. The property may be acquired and the price determined by voluntary agreement, order of the state commission, condemnation in the courts or arbitration. Where electric franchises are in the form of indeterminate permits, municipalities seeking to operate their own systems must purchase the property at a "just compensation," which may be fixed by the state public service commission subject to court review.

Competing municipal projects also may be obstructed by obliging the municipal authorities to obtain a certificate of convenience and necessity from the public service commission before beginning construc-

tion, even when the projected plan will serve only a part of the town. If the commission grants the certificate, it virtually admits previous failure to establish fair rates and good service. Private utilities argue that the threat of municipal duplication of their properties compels them to accept less than fair compensation and that restraints upon municipal competition are a necessary protection. Public authorities reply that if the threat of duplication is eliminated, they must pay whatever price is asked by the private systems. Even the right to condemn the properties does not always assure a reasonable price.

The Problem of Duplicating Facilities

Municipal competition with private systems usually originates in popular dissatisfaction with private rates and service. The public may conclude that the wastes of duplication are justified if competition brings lower rates and better service. However, public plants overlapped privately-owned facilities in only eighty-five communities in 1939, affecting only 4.8 per cent of all consumers supplied with electric service. Many of these competing service areas were only partly overlapping.

The Public Works Administration has been criticized for financing the construction of duplicating facilities. An amendment to a PWA appropriation bill was proposed in May 1938 forbidding the allotment of funds for duplicating service unless the applicant had tried unsuccessfully to buy the existing private facilities at a reasonable price. This limitation was stricken from the bill when a spokesman for President Roosevelt promised that the PWA would follow this general policy.

In practice municipalities and private companies have usually disagreed on the purchase price. In determining if offers by municipalities were adequate, the PWA generally gave chief consideration to reproduction cost, less depreciation, plus allowances in some cases for the value of long-term municipal service contracts. Severance damages were disallowed. Where franchises were in force, a value (never more than 10 per cent of the value of the physical property) was included for the elimination of competition. Offers of only thirty competitive municipal projects were thus reviewed; sixteen were held to be fair, and

fourteen inadequate. After the new policy was announced, twelve communities purchased private properties which would have been duplicated. The offers of eleven others were rejected.

As of March 1, 1939 the Public Works Administration reported 107 allotments of \$32.1 million for "new municipal systems." Of these, only 24 were for communities which had never had electrical service, or for new units for existing systems. The remaining 83 allotments of \$22.2 million — chiefly for distribution facilities — substantially duplicated private facilities. Also, PWA assistance to nine competitive municipal systems already in existence probably extended duplication. PWA allotments to all competitive systems, new and old, were \$28.5 million. Applicants added \$20.4 million to this amount, making the total \$48.9 million. But even if all the construction so financed had been completed, not more than 0.4 per cent of the reported 1937 value (depreciated) of private plants would have been duplicated.

Further Obstacles to Public Ownership

Although in every state municipalities may legally acquire and operate electric utilities, their ability to supplant or compete with private systems depends on debt limitations. Some statutes limit total indebtedness to a prescribed percentage of the value of taxable property; others limit the indebtedness incurred in any one year to the income and revenue for the year; still others combine these two restrictions. Since debt limits are frequently too low to permit cities to finance electric plants, local public officials have sought methods of avoiding them. In a few states the bonds issued for this purpose are exempt from the usual restrictions. In others, even before the establishment of the PWA, municipalities were avoiding debt limitations by approving revenue bonds, special leases, conditional sales contracts or the creation of special utility districts. Since 1933 state laws authorizing the use of revenue bonds have been widely enacted. Their validity depends on the willingness of the courts to hold that the bonds are not debts within the meaning of constitutional or statutory restrictions, and most state courts have so held.

Private utilities have often obstructed public ownership by seeking injunctions against bond issues and the construction, extension or op-

eration of public plants. Condemnation proceedings have been prolonged, the legality of the actions of officials protested and the constitutionality of laws questioned. Such litigation has seriously hindered public ownership.

Up to the end of 1935, for instance, delays in 246 cases had averaged slightly more than fourteen months. These delays caused an average direct expense of about \$1,900 in each of some 200 cases — an average indirect loss or expense of \$73,582 in 160 of them. Plants proposed by 91 public authorities had not been built by the end of that year, 55 already operating had been hindered in construction, 47 extensions to existing plants had been held up and 17 had been delayed in operation. Injunctions in cases involving allotments of PWA funds were liberally granted until the United States Supreme Court in 1938 ruled that federal loans and grants to municipalities to construct competing power plants violate no legal right of private companies holding nonexclusive franchises, provided the cities have proceeded in accordance with state laws.

Public versus Private Rates

Typical bills of private and publicly-owned electric utilities show that average private bills are higher than public bills for residential service in the larger communities. The reverse is true in smaller communities. For commercial and industrial service the ratio of private to public bills also tends to be higher in the larger than in the small communities. The fact that many private companies charge uniform rates for all communities, although it usually costs more to serve small than large groups, may partly explain these differences. Municipal plants operating in small communities are of course unable to offset their high costs with the lower costs of serving large centers. They are usually unable, also, to generate or purchase current as cheaply as large-scale private utilities integrated over a wide area, and their engineering costs are often higher. Moreover, many small communities are served by municipal plants because private enterprise has been unwilling to furnish the service.

Public plants are alleged to favor small domestic consumers by fixing low rates for them and high rates for industrial and commercial users.

But in smaller communities, especially those of less than 1,000, the public rate appears to be higher than the private rate. Conversely, in communities of 50,000 and over the average private bill for 25 kilowatt-hours of residential service is 27 per cent higher than the average public bill, and 33 per cent higher for 250 kilowatt-hours. Likewise for commercial and industrial service, the private-to-public ratio is even higher than for residential service.

A study of the operation of 16 large noncompeting municipal systems and 19 selected private companies serving neighboring communities of similar size showed only 8 out of 96 instances where private bills were lower than municipal bills. In 54 of the 96 comparisons the private bills were higher by 20 per cent or more; in 32, the private bills were 50 per cent or more above. Only one private bill was more than 10 per cent under the municipal bill. In the case of large competing municipal and private utilities typical bills were identical in 36 out of 69 cases, and of the remaining 33 only 3 favored the private utilities. For both the noncompeting and competing groups the comparison suggests that the large municipal plants favor commercial and industrial consumers rather than domestic consumers.

Municipal Rates as "Yardsticks"

Municipal electric rates are often held to be a yardstick for measuring the reasonableness of private rates. The measurement may be direct, as when the two systems are actually competing, or indirect through a comparison of rates. Since 1935 the Federal Power Commission's rate reports have facilitated such comparisons. But the direct effects of municipal rates are difficult to measure. Where public and private systems compete directly, their rates are so often identical that it is difficult to determine which system has been responsible for rate reductions. A study of eight pairs of competing systems over a twenty-year period shows that the municipal systems did not always lead in making reductions. But where there was a persistent divergence between municipal and private rates, the municipal rates were lower and thus probably exerted a downward pressure on the private rates.

It is also difficult to appraise the indirect effect of municipal rates. The yardstick influence has been limited by the practice of some mu-

municipal systems of maintaining rates level with those of private utilities in neighboring communities. Small municipal systems often have little effect as yardsticks since their rates are often higher than private rates in communities of similar size. Nevertheless, municipal rates seem generally to have pressed down private rates. The low resale rates of municipal distributors of TVA power appear to have induced rate reductions by private companies in the same area. Private rates tend to decrease as the number of municipal systems in a state increase. (See also Chapter 4, pages 58-59.)

Costs and Earnings of Municipal and Private Systems

When the costs of small municipal plants are compared with those of large, integrated private utilities, the comparison is between two types of technology and market areas rather than two systems of ownership. Large municipal electric systems therefore merit special attention because they have access to some of the economies available to typical private systems and beyond the reach of small municipal enterprises.

An analysis has been made of the costs and rates of 16 large municipal systems and 19 private systems serving comparable or identical cities. Not including fixed charges, municipal production and transmission expenses per kilowatt-hour sold were slightly higher. The sources of power — hydroelectric or steam generation or purchase — and the larger scale of private company production seemed generally to account for the chief differences in these costs. Other expenses — distribution, customer accounting and bill collecting, sales promotion, administration and general — were lower per customer for municipal than for private systems. These costs did not vary as widely among competing municipal and private systems as between noncompeting systems. A comparison of total operating expenses, both per kilowatt-hour sold and per customer served, suggests that in the case of noncompeting systems the advantage of municipal operation in distribution, customer, sales and administrative expenses overcomes its disadvantage in production and transmission. But in the case of competing systems the balance is in favor of the private utilities.

The municipal systems provided more adequately for annual depreciation and had also accumulated larger depreciation reserves. The pri-

vate systems had a considerably higher book value of property per customer than the comparable municipal utilities. Yet both private and municipal noncompeting systems usually received similar rates of return — 6 to 7 per cent (in terms of net operating income as a percentage of book value of fixed property less depreciation). Only three municipal systems reported returns in excess of 10 per cent in 1938. Competing municipal utilities earned generally lower rates of return than comparable private companies. Their earnings were moderate but sufficient for the needs of public operation. The earnings of competing private utilities did not indicate that municipal competition had been destructive.

Small municipal enterprises make no such showing when compared with private systems, but they cannot be dismissed as merely small-scale operations in a world of mass production. Small municipal plants continue to exist and even to increase, and the citizen-owner-consumers are often outspoken in their satisfaction with public ownership and operation. A comparative study in Nebraska in 1936 shows that the small municipal plants' costs of production were twice those of private plants while their distribution costs were only slightly lower. Yet municipal bills to residential consumers were generally lower than private company bills — at least in towns of 1,000 population or more. In smaller places municipal bills were higher, particularly for higher consumptions.

Relative Efficiency of Systems

Comparison of costs between public and private systems throws some light on their relative efficiency. In 1937, 5.1 per cent of the customers of all private utilities were classified as farm and rural, whereas only 2.7 per cent of municipal customers fell into this category. In so far as private companies have a lower customer density per mile, they are at a disadvantage in a comparison of distribution costs and investment per customer. But often higher rural costs have been offset, wholly or in part, by the requirement that rural customers finance substantial parts of the rural construction, in cash or higher rates, or both.

Studies of efficiency must take account of differences in source of power. Municipal systems more often purchase their power than pri-

vate systems but purchasing systems are generally small. Expenses of generation, not including fixed charges, are considerably lower for hydro-generated energy than for steam; internal combustion output costs may be lower than steam generation costs in small stations but higher in large stations. In 1937 steam stations produced half of the municipal and 64.3 per cent of the private generation of power in the United States. About one eighth of the municipal energy but less than one per cent of private generation came from internal combustion installations.

There is no satisfactory measure of the quality of service in private and municipal operations. Unless small municipal generating plants are connected to alternative sources of power, a breakdown of equipment frequently results and the "blackout" may be prolonged because the small operating staff cannot make quick repairs. Private utilities, on the other hand, can rush adequate men, tools and materials to meet an emergency.

Some small municipal systems unable to supply adequate service have been sold to private companies. Changes from public to private ownership in Nebraska have been made to improve and extend service. In eight communities the private companies promised to bring in new industries, suggesting that municipal systems often fail to obtain industrial loads because of unreliable service. Similarly, small private systems were acquired by municipalities in that state to improve or extend their service. Not all differences in service are significant in comparing public with private performance, for "gilt-edged" service in many communities may cost more than customers can pay or would be willing to pay if given a choice.

Taxes, Capital Investment and Wage Costs

Private utilities have claimed that rates of large municipal plants are lower than those of comparable private companies because public plants pay few or no taxes. The latter have contended that the large contributions they make in cash and free services more than offset the private tax bills. In 1936 public plants paid taxes amounting to only 1.1 per cent of their gross revenues, while private utilities paid 13.2 per cent as federal, state and local taxes. But when cash contributions and the net

value of free service were added to taxes, the total contribution of public operation to government was 25.8 per cent of gross revenues, or nearly twice that of private systems. The scattered data available indicate that when public and private rates and costs are adjusted for the differences in payments made to government, the municipal systems would show a generally favorable balance.

The municipal systems have an important advantage in that they can usually obtain capital at lower cost, although the cost varies with time and place. In recent years public utilities have been able to sell their bonds at lower yields than those on general obligation bonds previously issued by some municipalities. For the United States as a whole, private electric companies in 1937 paid interest (including amortization of discount or premium, and expense) amounting to 4.6 per cent on outstanding long-term debt, whereas municipal plants paid 4.1 per cent on outstanding bonds, including revenue bonds. Approximately half of the capitalization of private utilities consists of bonds. Since the remainder is preferred stock and common stock, with dividends depending in part on the directors, the cost of capital to private utilities is considerably higher than it is to municipal management.

Revenue bonds are being used increasingly by municipal electric systems, but even the cost of capital obtained in this way is lower than the over-all cost of capital to private companies. The credit standing of municipal utilities is apparently superior to that of private utilities, partly because municipal bonds are usually amortized, thus gradually reducing the risk of the bond holders.

Whether measured in terms of unit output, capacity or customer served, municipal investment in plant and equipment is often lower than that of private companies. This may be partly explained by differences in property evaluation or the failure of municipalities to keep full capital records. It suggests that municipal ownership is not generally inefficient. Comparisons are complicated by investment subsidies granted by the Public Works Administration as well as by differing accounting policies followed by the municipalities.

Comparisons of wage rates are difficult to make because no salary or wage data are available by size of community or geographic region. On an average, in 1937 private utilities paid their salaried employees

\$1,830 per year and wage earners \$1,611. Comparative municipal rates were \$1,410 and \$1,470.

Private utilities have been more active than municipal systems in developing new techniques, machinery and methods of organization — all of which tend to improve service, expand markets and increase output. Municipal utilities, however, have taken the lead in experiments with rate reductions.

In general the costs and rates of large-scale municipal systems compare favorably with those of private systems. Their advantages over small systems come from substantial savings in interest and the cost of capital, distribution expenses, customer accounting, sales promotion and general administration. The favorable showing of the municipal systems is not due to the availability of exceptionally cheap power. Some of them may fail to contribute a fair share to the support of government, but others have increased the costs of service by making large transfers of taxes, cash contributions and free services to the municipalities.

Factors Underlying Cost Differences

Municipal electric systems commonly amortize debt as well as depreciate plant. Hence during a part of the period of amortization their electric rates are higher than they would otherwise be. The costs of private and municipal systems can hardly be adjusted to eliminate differences in quality of service, technological improvements or wages. It is therefore impossible to strike an accurate mathematical balance between the costs of one system and another, much less between one type of ownership and another.

Variations in costs between municipal and private systems seem to arise mainly out of the scale of operation and the method of financing. But they may also stem from differences in the stimulus to efficiency inherent in each type of ownership.

Where electricity is produced on a sufficiently large scale, the cost of generation (including fixed charges on investment) is usually a minor part of the retail cost of power to the average domestic customer. But small systems, private as well as municipal, do not have as low a generating cost per unit of output as large electric systems and the cost of

generation is sometimes a major item. The typical municipal system, which operates on a small scale, thus may have higher generating costs than the typical private system. The limited market area of municipal systems may mean, however, that extensions of transmission and distribution facilities into lean territories have been avoided.

Municipal establishments can often buy power at a lower cost than they can generate it. While the rates at which many municipals have purchased energy do not seem discriminatory, it is difficult to determine how far they have actually shared in the benefits of large-scale production.

The costs of distribution, including commercial, sales promotion and general and administrative expenses, are generally lower for municipal than private utilities, even if lower taxes, interest and depreciation are discounted. The savings are greater if credit is given to municipalities for lower cost of capital. Even though the economies of distribution are largely independent of size, the very small municipalities are likely to have relatively higher costs than the larger systems.

Rate Policies

Few municipalities attempt to set rates on the same basis as private companies. The freedom of municipal plants to charge rates yielding more than a fair return, or to avoid payment of the full taxes imposed upon private utilities (without making any equivalent contribution to local government), should be taken into account in comparing municipal with private rates. They may plough back earnings or forego a full return on the city's investment. They may also charge rates which yield a return on property thus freed from debt, using the proceeds to hasten amortization, extend the system or reduce rates. Taxpayers may claim a return on the city's investment, and in New York State they can enforce their claim.

Municipal electric systems are increasingly used as sources of income for general city funds. While the exact extent of the practice is unknown, data on the transfers of taxes, cash contributions and free services by public and private utilities indicate it is prevalent in most regions. As has been said, for the United States as a whole, publicly-owned electric utilities transferred 25.8 per cent of gross revenues to

government, and private systems, 13.2 per cent. Only a small part of these payments represents a return on the city's investment. In Wisconsin, where municipal systems are regulated as public utilities and are allowed to earn 6 per cent on their rate base, they were reported by the Federal Power Commission to have transferred 17.6 per cent of gross revenue as taxes and cash transfers, and a slight amount of free services. If, then, 20 per cent of gross revenue is taken as a very rough approximation of normal profit operation, municipal systems were operated as tax-collecting agencies in 31 out of 46 states (no data were reported for 2) — that is, rates were charged which produced more than a "normal" return. Undoubtedly many municipal plants could therefore afford to reduce rates.

Municipal rates fixed to yield high profits restrict the use of electricity. A profit policy requires ratepayers to subsidize taxpayers, and it seems hardly likely that the losses of the group as consumers exactly balance their gains as taxpayers.

As has been pointed out, amortization complicates the problem of comparing the rates of municipal and private systems. Municipal systems, of course, are in various stages of amortization. Some of them are in the early stages when rates are high, others in later stages or where amortization is complete. Allowance for this difference could be made by substituting proper depreciation expense and a fair return on the rate base for the actual interest and amortization charges in order to make the municipal rates comparable with the private rates. In practice this necessitates a detailed analysis of the accounts and rates of municipal systems beyond the resources of the present study.

Another factor to consider is the geographical pattern of rates. Some companies adopt uniform or blanket rates for entire regions, whereas municipal systems do not normally charge uniform rates for both urban and rural areas.

Still another influence on rates is the municipal practice of supplying electricity to city authorities at less than the cost of production. Sometimes the price for such service bears only a remote relationship to its cost. Often the service is free. In such cases the cost must be recovered from other customers, who, in effect, subsidize the taxpayers by paying part of the cost of electric service to the city.

State and Federal Control over Municipal Systems

In 1941 only 24 out of 40 state commissions empowered to regulate electric utilities had control over municipal systems. Only 11 had power to regulate rates of municipal plants in and beyond city limits while 8 others could regulate their rates beyond the city boundaries. Thirteen commissions had jurisdiction over the service standards and performance of municipal systems, 19 over accounts and records and 13 over depreciation rates.

While Congress does not have power to regulate municipal utilities, it has influenced their operation by giving them priority in purchases of power generated at federal projects, and by vesting authority in the Tennessee Valley Authority and the Bonneville Administration to control the conditions of resale to municipalities. Municipalities purchasing power from the TVA agree to charge resale rates which cover wholesale power costs plus distribution. These and other provisions are intended to apportion costs fairly to customers without giving excessive profits to taxpayers. Municipal distributors of Bonneville power agree to similar policies. The authority given by Congress to the Public Works Administration to make grants for new construction also has had a limited influence on municipal systems. In its early years the PWA specified maximum rate limits in its loan contracts with municipalities.

The power of the states over municipalities is not restricted by the due process clause of the federal Constitution, nor by the contract clause. Aside from state constitutional and statutory provisions, a state commission with power to regulate rates of municipal power plants may ignore the doctrine of fair return on fair value. Yet commissions may be bound by judicial interpretations of statutory rules, and they are also limited by inadequate funds and personnel and an unwillingness to invade the autonomy of municipal governments.

State regulation of municipal utilities comparable to that of private utilities has often been proposed on the ground that consumers of municipal power are milked in order to reduce local taxes. Opponents of state regulation prefer to allow the local communities to decide whether electricity should be sold at cost or used as a source of revenue to reduce taxes. Experience in a few states shows that the friendly coopera-

tion of state commissions may be helpful to municipal enterprises. State regulation of their accounts and reports helps to counteract laxity and inefficiency and to encourage better management. Uniformity in accounts, if attained by state regulation, would facilitate comparisons with other municipal and private plants.

3. ECONOMIC APPRAISAL

The chief objectives of municipal ownership and operation of electric service have been: (1) to provide service where it has been lacking or inadequate, (2) to reduce the price of electricity, (3) to obtain revenue and so reduce taxes and (4) to help minimize the effects of depressions.

Municipal systems have not spent large funds on new construction to minimize the effects of economic depression. From 1932 to 1937 the book value of municipal plant and equipment increased approximately \$175 million. From 1933 to 1939 the estimated cost of projected municipal electric systems, to be met in whole or part by the Public Works Administration, totaled \$50 million. But many of these plants were never built. The two figures overlap considerably, yet their combined total is less than 4 per cent of the over \$6 billion estimated cost of non-federal and federal public works projects aided by the PWA from 1933 to March 1, 1939.

The most questionable objective of municipal electric systems is their use to augment city revenue and reduce local taxes. Electric bills then include disguised taxes, which fall most heavily on the lower income groups. Furthermore, to the extent that price inhibits consumption, this policy retards the achievement of larger consumption and lower costs. Municipal systems have usually contributed more than private systems to the support of local governments, even after adjustments are made for a return on the city's equity.

The problem of taxation involves requiring municipal systems to pay proper amounts to government but it also means preventing them from paying too much. Further expansion of local public power facilities will emphasize the need for requiring them to shoulder their full share of the costs of government, including the federal government, to

which they do not now contribute directly. The public mind should also be disabused of the idea that towns become "tax-free" through municipal profits from supplying electricity.

The effect of municipal ownership of electric systems on the rates charged by municipal and private systems cannot be measured exactly, but municipal ownership has reduced rates. Communities served by municipal systems frequently have lower rates than towns of similar size served by private utilities. Direct municipal competition has reduced the rates of private companies. In communities where private systems compete directly with municipal plants, average private bills are usually considerably lower than average private bills where they do not compete. Moreover, as the number of communities in a state served by public plants increases, the average typical bills of private utilities decrease. Where municipal and private systems are directly competitive, the typical bills of the two are often identical. But where they diverge, the municipal bills on the whole are lower than those of private utilities.

Municipal ownership does not always reduce the price of electricity. In the southern states municipal rates seem designed to relieve the taxpayer rather than the consumer. Also, municipal systems in very small towns generally have not been able to supply electricity as cheaply as large integrated private systems. A universal policy of municipal competition is probably not desirable. Duplication of investment and operation often means higher costs. A progressive and vigorous public monopoly is apparently likely to have lower costs and rates than one which faces competition.

Appraisal of Municipal Efficiency

In the electric light and power industry there is no conclusive evidence that private enterprise is more or less efficient than public enterprise. The profit motive may result in low costs if full advantage is taken of the possibilities of increasing consumption by low rates. On the other hand, private companies when handicapped by heavy financial burdens have been reluctant to take the risk of lowering rates because of the high ratio of their overhead to total costs.

Municipal systems have often been condemned as wasteful, uneco-

nomical and inefficient. Management is said to be political and, if not corrupt, inept because of lack of business acumen and technical skill; or, if not inept, slothful and unenterprising because of lack of incentive. The results of bad management are alleged to have been kept from the public by inadequate and unorthodox accounting, and especially by concealing deficits and defects in operation behind the skirts of the general city budget. Finally, waiving the question of skill and honesty, municipal systems have been said to be slow to adopt technological improvements because they are unable to operate on as large a scale as private utilities.

Without doubt the accounting and record-keeping methods of municipal plants vary widely. State regulation can best improve public performance by establishing sound accounting procedure and adequate reporting. Federal power projects have improved the standards of record keeping of municipal distributors of federal power. The growing practice of issuing revenue bonds will also induce segregation of municipal electric plant accounts from general city funds.

The shortcomings in the accounting practices of both municipal and private utilities have constantly hampered investigators who attempt to appraise their relative operating costs. But the information available indicates that, except in small communities, the rates of municipal systems compare favorably with those of private systems. Their costs also compare favorably despite the smaller scale of municipal production.

Municipal utilities have been financially successful, and amortization of debt has left them in a better position than private utilities to make future rate reductions. Their major economies have been achieved in the form of lower capital costs, owing to the lower price they pay for the use of capital, more conservative valuation of assets, and lower distribution, sales promotion and overhead expenses. Thus if municipal utilities have not had all the opportunities available to a private system, they have been freed of heavy financial and administrative overhead. In many cases, in fact, they might well spend more on better management and business promotion. Any waste, corruption or lack of enterprise has not, on the whole, offset these gains. Subsidies in recent years have been helpful but they account for only some of the advantages of this form of public enterprise. With the probable exception of the very

small systems, the present use of municipal operation is an appropriate means of reducing the cost of electricity.

Have municipal systems borne the full costs of their service? They have received relatively small grants from the Public Works Administration and some have also received aid by issuing general obligation bonds against the cities' credit. They have not paid taxes equal to those which would have been collected from private enterprise. The effects of such subsidies on costs are difficult to estimate and they should be balanced against the contribution of municipal systems to general city funds. While only rough guesses are possible in estimating these contributions (which vary greatly among systems), the weight of evidence indicates that municipal systems, as a whole, receive no net subsidy and that they yield an adequate return on investment to the cities.

Municipal utilities are responsible for little loss to the private systems. Whatever losses the latter have suffered are mainly due to rate cuts resulting from direct municipal competition, to yardstick comparisons based on municipal bills, or to attempts to discourage proposals for municipal ownership. Rate cuts have apparently resulted in little permanent loss of earnings. Private utilities have not generally been deprived of adequate returns by direct municipal competition but in some cases they have chosen to sell out rather than face it.

Development of a Coordinated Power System

Although municipal systems are born of local pressure to meet local needs, more than half of them by purchasing power are coordinate parts of larger integrated systems. This trend can profitably proceed further. The ultimate goal of a coordinated power system is the most economical arrangement of generating and distributing agencies, public and private. The future role of municipal systems in such a development seems to be in the field of distribution — except, perhaps, in the larger cities and towns. Municipal distribution systems would rely on central sources of power, either public or private. But the conception of the municipal system as a local profit-making enterprise hinders coordination of facilities. Independent municipals often object to restrictions in their contracts with a central agency covering their rates and financial poli-

cies. They therefore hesitate to become dependent upon outside sources of power.

A need seems to exist to prevent local interests from obstructing full electric development by operating the municipal plant as a profit-making or job-making agency. The practice of luring industries from one town to another by offering subsidies in the form of special rates or inducements is often uneconomical. It would seem that local managements should be allowed some leeway, however, in determining rates and accounting practices. Federal systems are making notable strides towards the solution of this problem but they have hardly begun to grapple with the problems of local self-government in rate making.

The movement for public power districts has revealed a desire on the part of some municipalities to be self-sufficient without regard for the interests of smaller villages and rural areas. Although power districts and rural public or cooperative systems provide a medium of public distribution of power in these areas, they may multiply administrative agencies at the expense of efficiency. Thus the problem is not merely to regulate these agencies but also to plan the best over-all methods of generation and distribution of electric power.

Chapter 8

PUBLIC RURAL ELECTRIC SYSTEMS

MOST ELECTRIC SYSTEMS restricting their service to rural areas are organized as consumers' cooperatives, financed and supervised by the federal government and classified as public organizations. Public rural systems date from 1935, although a few independently-financed cooperatives provided rural electric service before that time. Under federal stimulus their growth has been rapid. In 1937 cooperatives and public power districts sold electric service to about 86,000 customers and by June 30, 1941 to 780,000. The Rural Electrification Administration estimated the number of customers served as one and a quarter million as of the end of 1941.

During the first two decades of the present century private companies gave little attention to extending rural service. In 1923, however, the activities of the National Electric Light Association led to the organization of a joint committee representing private and governmental agencies to investigate and promote the use of electricity on farms. In the following year a report by the U. S. Department of Agriculture showed that agriculture used more primary power than any other industry with the exception of transportation, but that only 4 per cent of this power was electric. In 1924 only 3.2 per cent of the farms in the United States were receiving electric service.

Gradually private companies began to liberalize their previous policy of requiring prospective customers to provide all the capital for rural extensions. During the twenties many companies set up rural service departments to promote electrification of farm buildings and dwellings, so that from 1924 to 1931 the percentage of farms receiving electric service rose from 3.2 to 10.4 per cent.

Faced with a crushing relief problem in 1933, the Federal Emer-

gency Relief Administration investigated the possibilities of extending electric service into rural areas. The Public Works Administration sponsored state legislation to establish public agencies to which the federal government could lend funds for rural electrification. Two years later President Roosevelt recommended a broad rural electrification program proposed by the National Resources Board, for which Congress appropriated \$100 million in the Emergency Relief Appropriation Act of 1935.

1. THE RURAL ELECTRIFICATION ADMINISTRATION

The characteristic organization of public rural electric service is one in which local distribution facilities are operated by government-financed consumers' cooperatives. These cooperatives usually purchase power from some nearby source, often from private generating companies. This method was not originally specified by Congress, nor was it laid down by the President in the Executive Order defining rules and regulations for projects administered and supervised by the Rural Electrification Administration. But in 1936 Congress specified that preference in granting loans should be given to public agencies and cooperatives.

The Rural Electrification Administration was established by the President on May 11, 1935, with \$75,000 allocated for expenses. The Administrator was appointed "to initiate, formulate, administer, and supervise a program of approved projects with respect to the generation, transmission, and distribution of electric energy in rural areas." The REA was authorized to make loans to private companies, associations and cooperatives for the purpose of financing construction. It could also make loans to states and municipalities and to self-liquidating public projects if not less than 25 per cent of the money was to be paid out for labor. It was given "exclusive authority to approve and to execute with the borrowing agency a loan contract under the terms of which the borrowing agency agrees to construct or cause to be constructed the project according to specifications determined or approved by the Rural Electrification Administration."

Legislation passed in 1936 provided for a ten-year program of rural

electrification and placed the REA on a more permanent basis. The Reconstruction Finance Corporation was directed to make available up to \$50 million for the fiscal year ending June 30, 1937, and for the nine years following Congress was "authorized" to appropriate \$40 million annually. The Act empowered the REA to finance the construction and operation of generating plants, electric transmission and distribution lines, or systems, to provide electricity to persons in rural areas *not receiving central station service*. All loans were to bear interest and were required to be self-liquidating within twenty-five years. The Act also enlarged the purpose for which loans could be made and authorized the REA to extend the time for payment of interest and principal.

The Act of 1936 made little specific provision for supervision over projects, except that all loans were to be made on such terms and conditions as the REA should determine. The total resources for REA loans through the end of the fiscal year 1940-1941 were over \$374 million.

Purposes and Terms of REA Loans

REA policies have been concerned chiefly with the kind of borrowers and the purposes and terms of loans. Acting under the original Executive Order, Morris L. Cooke, the first REA Administrator, announced his readiness to deal on equal terms with all types of borrowers.

After various conferences between REA officials and private and public utility managers, a committee of private utility executives was appointed to conduct a nation-wide survey and outline a program. The committee believed that the problem of rural electrification was not to fix rates but to develop consumption and finance wiring and appliance purchases. It therefore proposed to charge rates similar to those already in effect in rural districts.

The Administrator decided, however, that rural areas could be electrified only if (1) construction costs were reduced to a minimum consistent with good service, (2) rates were simplified and lowered and (3) capital contributions towards extension of service and high minimum bills were eliminated. He announced that "in weighing the rela-

tive desirability of loans, it will be necessary for REA to consider carefully existing and proposed rate structures with reference to developing the large use essential to the success of our program."

The utility industry did not seem to be prepared to accept these terms, for by the end of 1935 few loans had been applied for or made to private borrowers. Although the REA has continued to consider applications from private utilities, less than 2 per cent of its total loans have been to private borrowers. When it became apparent that the private utilities would not, or could not, meet its terms, the REA reshaped its policies to give special consideration to nonprofit associations. As of January 31, 1941, 721 of the 800 borrowers of REA funds were co-operatives, 54 were public power districts, municipalities and other public bodies and 25 were private companies.

Congress permitted the REA to decide if it would finance generating and transmission facilities as well as distribution lines. Its policy is to finance generation only when it decides no satisfactory source of power is already available. Only 3 per cent of the \$358 million allocated by January 31, 1941 was earmarked for generating plants compared to 95 per cent for line construction. As of June of that year the REA had financed generating facilities for only 4 per cent of its borrowers.

Since 1936 rural electrification has also been aided by public loans, repayable in installments, to finance wiring and the purchase and installing of electric and plumbing equipment. The REA has made five-year loans for these purposes to cooperatives and other public agencies, which relend to their members at 6 per cent on outstanding balances. By January 31, 1941, 2 per cent of the total allotments, or \$7.3 million, had been made to cooperatives and to other public agencies for wiring and plumbing.

During the years 1936-1940 the general trend was to liberalize the terms granted to borrowers by shifting loans from twenty- to twenty-five-year amortization periods and extending the period during which interest may accumulate. According to the REA, these changes were necessary because systems could not be constructed and energized during the twenty-year period originally contemplated, and also because borrowers were frequently obstructed by private power companies.

Rural Electric Cooperatives

The rural electric cooperative — the principal means of providing rural electric service through federal loans — is defined by the REA as "an incorporated association of neighboring farmers and other rural residents, organized democratically for the purpose of supplying electricity to its members at the lowest cost made possible through mutual self-help and REA financing and guidance." It differs from other consumers' cooperatives because the federal government finances it almost entirely, helps to establish and operate it to a much greater extent and supervises it much more closely.

When the REA began its promotion of rural electric cooperatives, it found in many states either inadequate or no legal provision for their formation. It drafted a model state law and assisted cooperatives in securing the passage of this as well as other favorable legislation. This law, which has been adopted by a number of state legislatures, sometimes with modifications, gives cooperatives broad powers "to generate . . . purchase . . . and transmit . . . electric energy, and to distribute, sell, supply, or dispose of electric energy in rural areas to its members, to governmental agencies and political subdivisions, and to other persons not in excess of 10 per cent of the number of its members." It empowers them to make loans to members for wiring premises and installing electric and plumbing fixtures and appliances; permits them to use the highways and public lands in the same way as other agencies, conferring the power of eminent domain; and exempts them from excise taxes, substituting an annual fee of \$10 for each 100 members served within the state. Cooperatives are also exempt under this law from the jurisdiction of state regulatory commissions.

Cooperative rural lines have been built at substantially lower costs than prevailed before 1935. Comparisons should take into account that the cooperatives used the cheaper methods general throughout the industry by that time and that most private rural line construction has also shown substantial cost reductions. On the average, however, private utilities do not approach the low cost of projects financed by the REA. Much of the saving has come from the efforts of the Tennessee Valley Authority and subsequently of the REA, to standardize design and apply mass production methods.

In 1939 the REA formulated a group-buying program under which it acts as a clearinghouse. The plan has been extended to the purchase of meters, transformers, office safes and other equipment, of which about \$1 million had been bought by 1940. Under a Self Help Program members may contribute their labor to the construction of the distribution system and be recompensed by credits towards the cost of wiring and appliances.

REA Supervision of Cooperatives

The indenture or contract which governs the relations between the REA and the cooperatives after the system is in operation provides for REA supervision of all major aspects of operating policy. There are ten regional supervisors. Project borrowers must submit annual and monthly operating statements and, where necessary, recommendations are made to help the cooperative management in effecting economies. The indenture also prohibits contracts for purchase of electric energy without the Administrator's approval. Some farm organizations have protested against the REA's decision to build a generating plant when they felt a reasonable rate had been offered them by a private company, while others have passed resolutions favoring the building of power facilities. The REA has also attempted to persuade state commissions to fix the wholesale price of power sold to nonprofit cooperatives.

The REA has no Congressional mandate to regulate the retail rates of cooperatives, but it has provided in the indenture that, subject to the laws of the state and the rulings of regulatory bodies, the cooperatives must charge rates sufficient to pay taxes, maintenance, cost of electric energy and other operating expenses, to meet principal and interest charges when due, and to provide a reasonable reserve for working capital. In practice it virtually determines their retail rate policy.

A staff of specialists is employed to explain the uses of electricity on the farm and in the home. The REA also attempts to promote wide use of electricity: (1) by making appliances available at lower prices, (2) negotiating with manufacturers for "packaged" light fixtures at a unit price, (3) securing bids for unit wiring and the like.

A uniform system of accounting similar to that established by the

Federal Power Commission has been set up by the REA. It has been modified to meet the peculiar needs of cooperatives as well as the requirements of various state laws and public service commissions. Periodic operating audits were contemplated, but relatively few have been made owing to the pressure of construction activities.

State Participation

About half of the state governments have participated by enacting legislation to permit or facilitate the organization of rural electric cooperatives. Before 1935 no state statutes specifically authorized farmers' cooperatives to provide electric service. In three states the old laws governing cooperatives or nonprofit corporations have been amended to permit the organization of REA cooperatives. In others they may be formed under the general cooperative laws, agricultural marketing laws, or nonprofit corporation laws which do not specifically mention rural electrification. While state regulatory commissions have not actively promoted cooperatives, a few have provided farmers with information on loan requirements when the program was initiated. Some states, by legislation or executive action, have created rural electrification authorities or committees to coordinate the interests of the REA and local farmers not yet provided with electricity.

Since the lines of some cooperatives are deeply interlaced with those of existing private utilities, considerable friction has arisen. Farmers living within reasonable distance of a private utility line have often decided that immediate service is more important than eventual cooperative service and have made application to the private company for an immediate extension. Whatever the occasion for them, these so-called "spite lines" have been an obstacle to the REA program, particularly in its early years. However, they account for only a portion of the conflicts over territorial rights.

Some applicants for private service, for instance, have argued that they have a legal right to public utility service and should not be forced to "go into business for themselves," while other farmers have preferred to wait for cooperative service. Feeling has sometimes run high. The cooperative has needed all or most of the customers on whom it originally counted, as well as certain sections of the distribution line for

access to other parts of its territory. On the other side the private company, legally obligated to serve all applicants who would meet its terms, has felt free to change these terms to suit changing conditions. The public service commission, if one existed with jurisdiction over private line extension, has thus found itself in a difficult position.

As early as 1935 state commissions took steps to require private utilities to obtain authorization for constructing rural extensions other than short spurs. In 1936 the Wisconsin legislature prohibited the construction of private utility facilities in territory claimed by a cooperative, for a period up to eighteen months. Two other states have taken similar action. The problem of "spite lines" is likely to diminish if the private companies adopt the REA's policy of service to the whole area.

Cooperatives have applied to state commissions for aid in obtaining low-cost wholesale power, with varying degrees of success. The Wisconsin commission, for example, eventually permitted and even encouraged private utilities to offer cooperatives lower rates than they offered to municipal and other public utilities. Some of the rates obtained in other states were below full costs, but safely above the added costs incurred in supplying power to the cooperatives.

When rural electric lines are constructed adjacent to certain types of telephone lines, the phones may be made almost useless because of noise. It is generally cheaper to correct this by adding another wire to the telephone lines, but independent and "mutual" telephone companies have always insisted that the cost of the correction be paid by the electric company if it is last on the scene. The REA has flatly refused to finance any part of this work unless forced to do so by the courts.

State governments generally do not regulate rural cooperatives in the same way as private systems. In the forty-two states in which cooperative distributing agencies have been formed under the REA program, only five state regulatory commissions claim complete authority: (1) to determine whether the line should be established and (2) to regulate rates, financing, service rules and regulations, and reports. In seven states commissions exercise limited jurisdiction, and in two states loans have been made only to public utility districts. In most of the states cooperatives are not subject to state authority. In eleven states, in

fact, cooperatives are expressly exempted from commission authority either by judicial decisions or legislation. A few states have also granted cooperatives preferential treatment in the matter of taxation. The REA opposes ordinary commission control on the ground that the delay, expense and difficulties involved in formal proceedings provide an opportunity for opposing interests to obstruct the cooperative electrification program.

Accomplishments of Public Rural Service

The results of the REA program can best be appraised in terms of the amount and cost of service provided by rural electric cooperatives, and their repercussions on private systems.

The REA has estimated that 30 per cent of all the farms in the country — about 2.1 million — were receiving electric service on January 1, 1941, compared with 11 per cent at the beginning of 1935. REA borrowers alone were serving approximately 675,000 farm families and other rural users from the 270,000 miles of line operated by nearly 700 rural systems. Approximately 45 per cent of more than 1.2 million farms served for the first time in the period 1935–1940 got their electricity from projects financed by the REA. The remainder bought it from private companies.

The REA and the cooperatives have been beset by many problems in their efforts to liquidate loans out of revenues obtained from low retail rates. Many cooperatives are operating in territory which had not seemed profitable enough to attract private service. Few cover any densely populated urban communities. Moreover, little experience was available on which to base estimates of load, load factor, costs and revenues of strictly rural enterprises. It is still too early to determine the success of their rate making. The "typical 3-to-the-mile farmer using 100 kilowatt-hours per month" pays about 4.5 cents per kilowatt-hour. The REA estimates that when usage has increased and the government loan has been paid off, the rate can probably be reduced to 2 cents. In 1939 some cooperatives offered service at a special minimum rate of \$1 per month to low-income residents located within 1,000 feet of an existing or proposed distribution line.

There is little information on whether rates charged by rural co-operatives are higher or lower than those of private utilities serving similar territory. Many are strikingly lower; others are higher — particularly where private companies serve urban and rural customers at uniform rates, as in Michigan. A 1939 survey of rural rates in Wisconsin shows little difference between the net monthly bills of private, municipal and cooperative systems. The rates of cooperatives cover amortization charges sufficient to purchase the line in twenty-five years. Moreover, they have come last on the scene and presumably operate in less attractive territory than do private and municipal utilities.

Data on the relative over-all costs of private and public rural systems are almost entirely lacking. The cost of private rural service cannot be calculated without arbitrary allocations of expense incurred partly for rural and partly for other services. Similarly, the rates of the cooperatives are affected by methods of operation peculiar to themselves, such as the services of volunteer workers, self-reading of meters, self-billing and the like.

During 1935–1940 over 695,000 farm customers were gained by private electric systems, more than during the whole of the preceding decade. During 1936 alone 245,000 farmers received private service for the first time. How much cooperatives influenced this rapid expansion of private service is uncertain since the growth of cooperatives coincided with a rise in farm income, a reduction in costs of rural extensions, an increase in the efficiency of domestic appliances and an improvement in the financial condition of private utilities. But it is widely contended that the public rural program has stimulated the private expansion, thus partially offsetting the pre-emption by cooperatives of territory into which private interests would eventually have extended service.

The development of public rural systems has not disturbed the present market of private utilities. In fact, the REA's policy of buying power from private generating companies wherever possible has actually increased the demand for power from the private systems. During the fiscal year 1940 REA-financed systems purchased at wholesale more than \$2.3 million of electric energy from private utilities.

Effect on Wholesale Rates

Since the cost of purchased power constitutes 39 per cent of all operating expenses of the cooperatives and is equivalent to about 75 per cent of interest and amortization charges, it has an important effect on the ability of the cooperatives to meet their obligations. The REA is aiming at a wholesale power rate of less than a cent per kilowatt-hour. For the fiscal year ending July 1, 1940 the average cost of energy purchased by REA cooperatives from both public and private agencies was 1.08 cents per kilowatt-hour. During its first three years the REA had difficulty in getting sufficiently low rates although it did succeed in lowering the rate gradually. It claims that its present success could not have been achieved without constant pressure, negotiation and even threats to install competing generating plants.

The low rates granted to rural cooperatives have not forced other wholesale rates down to the same level. A price differential could normally be justified, since practically all sales to cooperative systems have been made from existing transmission lines without reduction in voltage. But the differentials have sometimes strained relations between private utilities and their municipal wholesale customers.

Public rural electric service has precipitated demands on private utilities for lower rates and more liberal extension rules, especially where competition has been fairly direct and where private rates and rules have not been as favorable as those proposed by the REA. The pressure can of course be reversed, as in Michigan where private companies were already serving rural customers at the same rates as urban customers. The influence of public rural systems in obtaining more liberal rules for extending service has been at least as important as their effect on rates.

2. APPRAISAL AND CONCLUSIONS

According to Administrator Morris L. Cooke, the objectives of the REA program were: (1) orderly progress in extending rural electrification; (2) improvement in the rural standard of living; (3) the minimizing of the depression through increased demand for durable and semidurable goods, increased employment in construction and perma-

ment employment in maintenance and operation of lines. Another objective — the encouragement of the consumer cooperative movement — became apparent as the program developed. Recently, the REA has promoted the war program by making available power facilities to factories in rural areas and by facilitating internal communications.

There is no doubt that rural electrification has been accelerated by the program. When the REA was established in 1935, only 11 per cent of the farms in America had electric service. At the rate of electrification at that time, it was estimated that fifty years would be required to provide service for half the farms of the country. Yet within six years 30 per cent of them were already getting service. Although the improvement in rural living conditions due to increased use of electricity cannot be measured statistically, electrification has undoubtedly helped to make rural life more comfortable, attractive and profitable.

As of August 31, 1941 the REA had allotted more than \$388 million to rural electrification projects, and the estimated value of the construction, wiring and plumbing materials used on its projects between May 1935 and June 1939 was about \$145 million. Wiring and plumbing installations used on its projects but not financed by REA loans utilized almost \$27 million of materials. In addition, the average farm family spends about \$200 for electric appliances during the first year of service.

It is doubtful if the growth of the consumers' cooperative movement in other fields has been accelerated by the program of the REA. Rural electric cooperatives, although self-governing in theory, have been permitted only a narrow range of self-determination in fact. Their personnel, capital expenditures and operating policies are closely controlled by the REA. The principle of the patronage dividend — a vital element in the usual consumers' cooperative — is inoperative because the REA has not permitted rural cooperatives to sell at the market price and distribute any resulting profits among their members in proportion to members' purchases.

The REA policy of closely supervising the cooperatives may incur criticism. But it should be remembered that the cooperatives are almost wholly financed by the federal government and that the REA is charged with lending public funds under conditions which will insure payment

of interest and amortization of principal. Furthermore, when a cooperative completely liquidates its loan, it presumably frees itself of government supervision and becomes entirely a community-owned and community-operated enterprise.

Attempts to determine whether the benefits of rural electrification are worth their cost are greatly facilitated by an analysis of the general costs of the program, although no final answer may be given at the present time. The REA program is probably less open to the charge of penalizing investors in private electric systems than is any other phase of federal power policy. The principal criticism is that the projects will not be self-liquidating. Many private utilities believe that the cooperatives will not be able to pay interest and amortize their loans, and contend that even if they do so they are being subsidized. Private companies have also held that eventually they will be asked to take over the cooperatives. This belief has been fairly widespread but is now diminishing.

REA borrowers have had a very good financial record. Of \$10.5 million interest and principal due June 30, 1941, only \$124,897 (owed by forty-one borrowers) had not been paid within the grace period. As of the same date advance payments of principal and interest by 316 borrowers amounted to \$3.2 million. No information is available on the number of projects, by age groups, in default on their obligations.

The Question of Subsidy

Few statistics are available to show whether rural cooperatives can maintain their present rates without subsidy. Since the program is still in the stage of building up its load, current statistics do not indicate whether revenues will ultimately cover costs. A comparison of August 1938 with 1939 records for 650 systems financed by the REA shows, however, that net revenues increased about 80 per cent and operating costs by only 21 per cent. This suggests steady progress.

It is sometimes said that the rates of cooperatives seem to cover their costs but actually fail to do so because of inadequate provision for depreciation. Except where state regulation requires it, cooperatives did not originally provide for property depreciation, nor did the retail rates include estimates for it. At the present time a revised uniform system

of accounts provides for the establishment of a depreciation reserve. The REA objective is to set up a reserve which will assure the existence of an efficient system when the government loan is fully amortized at the end of twenty-five years. Retail cooperative rates may, therefore, cover both depreciation and amortization, in which event cooperative members will in effect pay for almost twice the cost of the project during the period of amortization.

The possible sources of subsidy to the cooperatives — apart from losses to the federal government through possible defaults on loans — are low interest rates, tax exemptions and free services from the REA. Loans granted out of funds provided through the Emergency Relief Appropriation Act of 1935 were made for twenty years at 3 per cent interest. Borrowers of funds provided under the Rural Electrification Administration Act of 1936 pay interest at the rate which the government currently pays on its long-term obligations. This rate has been substantially lower than on long-term borrowing by private companies. Moreover, the loans to cooperatives represent the entire investment in their property, while private companies must finance a large part of their investment through more costly classes of securities.

All rural electric cooperatives are subject to social security and unemployment insurance taxes. They are exempt from the following federal taxes applicable to private utilities: income, capital stock, excess profits, energy and documentary stamp taxes. Cooperatives are also exempt from state income taxes, but this means little since they are organized to give service at cost. In most states cooperatives pay property taxes, although in a few they have been granted preferential tax treatment. The REA believes, too, that cooperatives should pay a smaller percentage of gross revenue in taxes than private utilities operating in more profitable territory. Although it applauds the states which have exempted cooperatives from all taxes, it does not advocate a policy of complete exemption.

Free services provided by the REA have undoubtedly helped the cooperatives to get a start. The extent to which these services are not paid for out of loans to cooperatives constitutes an element of subsidy. REA administrative costs for the fiscal year 1941 amounted to \$3.4 million, but only a part of this was spent for free services. A considerable part

of the total represents the costs of performing its lending functions.

This survey has indicated little direct federal subsidy to rural co-operatives. To the extent that they can obtain capital more cheaply than private companies they have an immediate advantage over private utilities. Only if the cooperatives cannot meet their obligations and the government is forced to sell or operate the lines at a loss will the federal government further subsidize the program through taxation. Any failure by cooperatives to meet interest and amortization may later reveal such a subsidy. Even if there are subsidies, however, they would not in themselves condemn the rural electrification program. It may be desirable to subsidize rural electrification — either for its own sake or to contribute to recovery in periods of depression.

Chapter 9

FEDERAL AND STATE PROJECTS

THE POWER POLICY of the federal government strikes deeper than is commonly supposed. The national government was selling power at least twenty years before the onset of the 1930 depression, and pressure in recent years to provide irrigation, to improve navigation, and to control floods at minimum cost has brought about a great increase in federal production of hydroelectric power. This development has brought with it new forms of organization and new policies in the sale of power. Yet the extent of federal activity in this field is less than is suggested by the publicity it has received.

In 1902 Congress established a Reclamation Fund to consist of moneys from the sale of public lands in arid and semiarid states. This was to be used to finance irrigation projects, the capital cost of which would be amortized by the water users in ten equal annual installments. Little irrigation actually could be financed in this way and in 1914 Congress began to make annual appropriations for an enlarged program.

When it passed the Reclamation Act of 1902 Congress laid down no policy for the disposal of electric power generated on irrigation projects. In 1906, however, it authorized the Secretary of the Interior to sell surplus power under contracts for not more than ten years, or to lease power privileges wherever the generation of power was necessary for irrigation or where power facilities could be developed advantageously. The first irrigation projects built to generate power were small and attracted little attention. After 1924, when income from power became important, the Bureau of Reclamation asked authority to pay power revenues into the Reclamation Fund to enable it to develop water power more fully. Congress failed to make the desired change in the law.

But the Boulder Canyon Project Act of 1928 marked a new development. The dam and attendant works not only supply irrigation water and electric power but also contribute to the control of floods and provide cities with water. President Hoover endorsed this type of multiple-purpose project, provided that contracts for the sale of all the power were secured before the government made any financial commitments. Since 1933 a number of analogous projects have been authorized, the largest being the Columbia Basin Project (Grand Coulee).

Thus the federal government came to generate power incidentally to irrigation developments. It supplied capital for irrigation projects if the cost of construction and operation could be met out of the sale of water and electric power. The only element of subsidy in the program was the provision that the capital investment was to be returned without interest. The cost of dams and other works was not formally allocated between the various purposes. Later, legislation in 1939 authorized such allocations and required the payment of interest at 3 per cent on investments in power facilities.

Federal Power and Defense

Under the National Defense Act of 1916, President Wilson directed the construction of a dam at Muscle Shoals on the Tennessee River and an auxiliary steam generating plant at Sheffield, Alabama, for the fixation of nitrogen for explosives and fertilizer. The dam was not finished until 1925 and it remained in the hands of the War Department, which sold the available power to the Alabama Power Company. The long-continued controversy over the disposal of Muscle Shoals reflected increasing interest in public operation.

The dam and steam plant at Muscle Shoals were finally transferred to the Tennessee Valley Authority when it was established in 1933. The Authority was empowered to plan, construct and operate a series of dams, generating units and transmission lines designed to utilize the water power of the Tennessee River and some of its tributaries. Congress wrote the law partly as a contribution to national defense, and upon the recommendation of the Advisory Commission to the Council of National Defense, a further increase in the TVA's generating capacity was approved by Congress in 1940 to meet wartime power demands.

But in general the federal government has not tried to meet its defense power needs by organizing publicly-operated plants. The National Power Policy Committee has proposed instead a transmission network, operated by the federal government, to increase generating capacity for war purposes in the northeastern states.

Navigation and Hydroelectric Power

In 1909 Congress required that all preliminary examinations of projects for improving river navigation should include data on the "possible development and utilization of water power for industrial and commercial purposes," restricting these purposes to "their bearing upon the improvement of navigation and . . . their being coordinated in a logical and proper manner with improvements for navigation to lessen the cost . . . and to compensate the government for expenditures made in the interest of navigation."

The Corps of Engineers of the United States Army ignored possible hydroelectric developments in navigation projects unless an immediate market was available for the power. Consequently, they tended to consider only projects in which industrial and public service corporations expressed an interest. Where private interests were prepared to build dams at their own expense, the Army's Board of Engineers for Rivers and Harbors recommended this course — if proper facilities were provided for navigation. The Board was also prepared to design projects to permit private concerns to carry a part of their cost. After 1929 the government itself developed the power on projects involving both navigation and power generation. The new dams on the Tennessee River and at Bonneville, for example, are intended to improve navigation.

Flood Control

The control of floods has also necessitated the building of dams to store water in flood seasons and to release it at other times. Early in the nineteenth century and repeatedly after that time, Congress was urged to control floods, mainly on the Mississippi River, but refused on the ground that the building of levees provided local and not national benefits. After a great flood in 1882 Congress voted funds to aid in levee construction but only "to afford ease and safety to the navigation and

commerce of the channel and to deepen the channel." In 1892 it finally recognized, at least by implication, that flood control was a proper federal function by removing this restriction.

The conservation movement, which began early in the present century, foreshadowed a broader federal policy with regard to water resources. The National Waterways Commission, established by Congress in 1909 to investigate the waterways and harbors of the United States and to report, among other things, on plans for impounding flood waters, considered the desirability of multiple-purpose reservoirs. The Commission opposed a national flood control program in 1912 on the basis of cost and doubtful constitutionality. Control of floods continued to be regarded as a local problem, but occasionally Congress voted funds in the name of navigation to relieve distress and to aid in building levees. This later proved to be ineffective.

The first step towards preventive action was taken in 1916 when the House of Representatives appointed a Committee on Flood Control. In 1917 Congress appropriated funds to help control floods on the Mississippi and Sacramento Rivers. After a great flood on the Mississippi just ten years later, Congress appropriated \$325 million for flood control, without requiring local contributions. By this time the need for national action was widely accepted, and after 1933 the Public Works Administration began to finance both federal and nonfederal flood control projects.

Congress established a general policy for the first time in 1936 when 270 control projects were authorized. Under it the federal government bore construction costs while the states provided necessary lands and rights of way and maintained the completed projects. Further flood control acts in 1938 and 1939 authorized additional projects and relieved the states of any contribution. The federal government was authorized to reimburse the states for their land purchases and to acquire lands directly, and the states were no longer required to operate the structures. Under the acts of 1937-1939 approximately 370 projects were authorized, the total cost of which to the federal government was not to exceed \$669.1 million.

In its flood control projects the federal government has not developed much electric power. Power development raises a question

whether works designed and operated for the maximum use of power are less effective for controlling floods. This and similar issues appear to a lesser extent in the TVA and Boulder Canyon projects, which were authorized by special legislation both to control floods and generate power.

In general, while power-irrigation projects are constructed and operated by the Bureau of Reclamation of the Department of the Interior, those linked with navigation, flood control or national defense are usually constructed by the Corps of Engineers of the Army. Hybrid arrangements also arise, as for example at Bonneville where the dam and powerhouse were constructed and operated by the Army Engineers while transmission and marketing of the power were controlled by a power administrator from the Department of the Interior.

Federal Marketing Policies

Power marketing policies have changed greatly in recent years, chiefly in the extension of federal activity beyond generation, and in the control of the price at which power is sold. Also, as in the Tennessee Valley and at Bonneville, the government has engaged in transmission as well as generation. Congress has required, moreover, that public authorities be given preference as buyers of power generated at Bonneville, in the Tennessee Valley and at Fort Peck. The present trend is toward federal generation and transmission, with distribution by local public systems.

Before the Tennessee Valley Authority entered the power market in 1933 federally-generated power had been sold at the highest competitive price and the profits used to subsidize other government activities. There was little criticism of such projects as typified by the Boulder Canyon works, largely because they did not undercut the rates of private companies by attempting to lower the cost of electric power to consumers. Federal policy changed when the Tennessee Valley Authority announced that it would sell power at the cheapest possible price, and this policy seems responsible for much of the criticism leveled at the TVA.

The emergence of electric power as an important element in multiple-purpose projects has widened the scope of federal power planning,

as has the growing realization that the full development of water power resources is closely related to the broad economic development of the country as a whole. Under President Theodore Roosevelt a series of commissions formulated a policy for developing national resources, including multiple-purpose water projects. And after the first World War the Power Section of the War Industries Board, to meet the difficulties experienced in obtaining adequate power supplies for war purposes, made a series of reports "with a view to promoting preparedness." These set forth in general "the plans under which the power resources of certain districts should be developed on broad lines, so as to afford reasonable protection against the difficulties experienced during the World War and at the same time to utilize to the utmost the energy available, both developed and undeveloped." A member of the Corps of Engineers of the United States Army concluded that "the status of the power business in the districts covered by these reports shows clearly the need of adopting a comprehensive policy with definite plans for the construction of unified power systems covering large areas, many of which are interstate in their extent."

The development of large power resources in the Tennessee Valley may be regarded as an integral part of a broad regional program. The President was empowered by Congress to make general surveys of and plans for the Tennessee River Valley and adjoining areas in order to recommend the necessary legislation to achieve: (1) the maximum amount of flood control, (2) the maximum development of the Tennessee River for navigation purposes, (3) the maximum generation of electric power consistent with flood control and navigation, (4) the proper use of marginal lands, (5) the proper method of reforestation of all lands in the drainage basin suitable for that purpose and (6) the economic and social well-being of the people living in the river basin. The Tennessee Valley Authority has therefore worked to improve agricultural methods, to control land erosion and to assist generally in local planning. Success in these efforts will help directly to extend the market for its electric power.

While, as we have seen, the federal government until 1933 regarded electric power solely as a source of revenue to subsidize other government functions, especially irrigation, since 1933 a change in policy has

taken place. It was believed that publicly-operated plants could by charging lower rates provide a check on private rates, which many considered too high. This change of policy has been actively supported by President Franklin D. Roosevelt. In a campaign address on September 21, 1932 he declared that since it was beyond the power of government always to secure adequate utility service at reasonable rates, local public authorities should have a right to establish their own systems. "The very fact that a community can, by vote of the electorate, create a yardstick of its own, will, in most cases, guarantee good service and low rates to its population. I might call the right of the people to own and operate their own utility something like this: a 'birch rod' in the cupboard to be taken out and used only when the 'child' gets beyond the point where a mere scolding does no good. That is the principle which applies to communities and districts, and I would apply the same principles to the Federal and State Governments."

Those interested in low electric rates had long claimed that high rates were responsible for low consumption, which in turn was responsible for high costs and therefore high rates. If domestic consumers could be induced to buy in larger quantities they could be supplied more cheaply. But risks were involved in reducing rates in anticipation of increased consumption. Most private utilities with capital structures to support were not able, or were unwilling, to risk the effects of cutting rates in anticipation of increased use. Also, regulatory bodies could not enforce reductions based on the assumed costs that might result from increased consumption. Federal agencies, however, could take these risks and thus demonstrate the truth or falsity of the general claim that lower prices, which would promote consumption, might not reduce profits but even increase them in the long run.

While these arguments apply equally well to hydroelectric or steam-generated power, federal activity has been based on the development of water resources largely for two reasons: (1) the United States had hydroelectric resources of such immense magnitude that their utilization was often beyond the financial capacity of any existing private organization and (2) since the time of Theodore Roosevelt the public has been deeply interested in the conservation of natural resources for the benefit of all the people. It was therefore easy for its advocates to argue

that complete federal operation was the most effective way of insuring public enjoyment of our water resources. The sensitiveness of Congress to these influences was heightened by the business depression in 1933. (See Chapter 11, page 190.)

1. FEDERAL POWER OPERATIONS

The electric power operations of the federal government accounted for only 4.2 per cent of the total output and about the same percentage of generating capacity in the United States in 1939. But these figures do not fairly measure the federal challenge to private utilities. The Tennessee Valley Authority is the most comprehensive federal project involving power production and for this reason it is given separate treatment in Chapter 10. The scope and nature of the federal program cannot be appreciated, however, without consideration of a number of other projects.

a. BOULDER CANYON

The Boulder Canyon Project Act of 1928, for which the Colorado River Compact of 1922 prepared the way, authorized the Secretary of the Interior to construct a dam at Boulder Canyon, or Black Canyon, where the Colorado River divides Nevada from Arizona. The dam was completed in 1936, is 726 feet high and creates an average water head of 522 feet. The storage reservoir can hold 30.5 million acre-feet of water, or about the average total flow of the river in two years. Powerhouses located on each side of the canyon below the dam now contain generating capacity of 535,000 kilovolt-amperes and are planned to have an ultimate capacity of over 1.3 million kilovolt-amperes.

Both the dam and the powerhouses were constructed under the supervision of the Bureau of Reclamation, but Congress required the Secretary of the Interior to make firm contracts for the sale of power sufficient to insure repayment with interest of all federal expenditures on the project. It left him to decide whether to operate the power plants, to lease rights to the falling water for generating power or to permit the lessees to construct the power plants, the government fur-

nishing only the water. The Secretary decided to lease rights to the falling water, although payments are in terms of kilowatt-hours of electric energy. The federal government built the powerhouses and provided the capital for all the turbines and generators. Originally the power allottees were to pay annual sums sufficient to cover interest at 4 per cent on the federal investment in generating equipment and to amortize the investment in ten years. In 1937 the Secretary of the Interior began to extend to fifty years the amortization period.

The federal government transmits no power from Boulder Dam. Two transmission lines have been built by the city of Los Angeles, a third is now in construction and the Southern California Edison Company has also built a line. Altogether about \$40 million has been invested in these lines.

In 1940 Congress changed the method of determining the price of power at Boulder Canyon and the rate of interest to be paid to the government on its investment, making the changes conditional upon terminating most of the existing power leases. It also authorized the operation, maintenance and replacement of generating equipment parts by the government directly or through agents appointed by the Secretary of the Interior. The Secretary has announced that he proposes not to operate the plant but to appoint the present lessees as his agents.

Distribution of Boulder Power

The disposition of power was determined before the construction of the project. The Secretary of the Interior was required to contract for revenues "adequate in his judgment to insure payment of all expenses of operation and maintenance" and for the amortization of all capital sums invested by the United States. Accordingly, he made fifty-year contracts which allocated all the firm energy to be generated at Boulder Canyon: 18 per cent to go to the state of Arizona, 18 per cent to the state of Nevada, 36 per cent to the Metropolitan Water District (for pumping), 19 per cent to the city of Los Angeles and other southern California municipalities, and 9 per cent to the Southern California Edison Company and other private companies. The total amount of firm energy to be produced was 4.3 billion kilowatt-hours.

Arizona and Nevada and the California municipalities, except Los

Angeles, merely have options on power up to the percentages stated above. Nevada has taken only a small part of its share of the power and Arizona, which alone of the interested states never signed the Colorado River Compact, has taken none directly. The demand from the Metropolitan Water District for water has not reached expectations, largely because the population of Los Angeles has not grown as rapidly as was expected. Consequently, in the year ending May 31, 1939 the amounts of firm energy taken by the allottees from a total output of over 2.0 billion kilowatt-hours were: city of Los Angeles, 1.0 billion kilowatt-hours, or 50.3 per cent of the output; city of Pasadena, 47.9 million, or 2.4 per cent; city of Burbank, 17.5 million, or 0.9 per cent; city of Glendale, 55.9 million, or 2.8 per cent. The state of Nevada took 34.4 million, or 1.7 per cent; the state of Arizona took none; the Metropolitan Water District, 769.0 million, or 38 per cent; the Southern California Edison Company took none; and the Nevada-California Electric Corporation took 78.8 million, or 3.9 per cent.

Because of these contracts most of the Boulder Dam power has flowed into California. The amount of both firm and secondary power actually flowing there in 1939 was about 17 per cent of the state's total annual consumption. Eventually, the total firm power likely to flow into that state each year will be about 13 per cent of its total 1939 consumption.

The effect of Boulder Canyon power upon the market of the private companies is largely concentrated on the Southern California Edison Company, which serves almost all of southern California. That company lost about \$3.4 million per annum in gross revenue when the city of Los Angeles ceased buying Edison power on January 1, 1937, but by 1939 the Edison Company was itself purchasing power from Boulder Dam.

Original Price Policy

Congress laid down the price policy at Boulder Dam in 1928 to accord with the existing practice of the Bureau of Reclamation — that power should be sold at approximately the current market price and the resulting profits be used to subsidize other aspects of the project.

This "competitive price" policy had certain shortcomings and led to

repercussions at other federal projects. In the years since the rates for electric power were first set, the supply of natural gas in California had become more certain. It therefore seemed reasonable to compare the cost of Boulder power with the cost of generating electricity in Los Angeles, using natural gas as a fuel. The efficiency of steam plants had also increased. Furthermore, the policy of the federal government at Bonneville Dam was alleged to result in a delivered price of less than half that at Boulder Dam, and this situation was cited as justifying the immediate reduction of Boulder rates.

The policy laid down in 1928 was also vulnerable because the "firm contracts" for the sale of power for fifty years were not firm. Congress had required that contracts should include provisions "whereby at the end of fifteen years from the date of their execution and every ten years thereafter there shall be readjustment of the contract upon the demand of either party thereto, either upward or downward as to price as the Secretary of the Interior may find to be justified by competitive conditions at distributing points or competitive centers." The city of Los Angeles and the Metropolitan Water District contended that the "competitive principle" should be replaced by the "amortization principle," and in 1940 Congress conceded this point.

1940 Price Policy

The price of power is now calculated to provide, together with other net revenues from the project, sufficient revenue to meet the costs of operation, maintenance and replacements and to amortize with interest at 3 per cent all advances from the United States Treasury to the Colorado Dam Fund — except \$25 million allocated to flood control. Revenues must also be sufficient to provide for annual payments of \$300,000 each to Arizona and Nevada and \$500,000 to the Colorado River Development Fund. All these adjustments were made retroactive to June 1937, to be continued until 1987. Power rates may, however, be revised by the Secretary of the Interior. This new policy will become effective only when the existing contracts for the lease of the power privilege and the operation of the power plant have been terminated.

The estimated price of firm power at Boulder Canyon under the "amortization principle" will be 1.035 mills per kilowatt-hour instead

of 1.63 mills under the "competitive principle." The cost of power delivered in Los Angeles at a load factor of about 80 per cent could therefore be reduced from 3.6 mills to 3 mills. If Los Angeles can raise the load factor at which it purchases to 90 per cent, the price of power can be lowered to about 2.5 mills. At this level Boulder rates can compete with those of Grand Coulee and Bonneville. It is claimed that even this low price exceeds the cost of steam generation in new Los Angeles plants.

Reduced revenues and increased payments at Boulder Dam were made possible by lowering the interest rate on the government's investment from 4 to 3 per cent. This brought the rate of interest closer to that charged on subsequent federal power developments. In fact, despite its wish to avoid risks, the federal government speculated on the interest rate as well as on the future price of power. Fortunately, the two speculations tended to offset each other.

The Boulder Canyon Project has much less effect on private electric power than other federal power projects. The private companies knew long in advance how Boulder power would reach the market because contracts were arranged before construction began. They may have signed firm contracts for power because they preferred to distribute it themselves rather than see all of it reach the market through public systems. Since the government sells its output at the site, there has been no restriction of private activity in the field of transmission. In general the private companies have neither gained nor lost as a result of the government's price policy at Boulder Dam.

b. THE IMPERIAL IRRIGATION DISTRICT

The All-American Canal in the lower Colorado was built by the Bureau of Reclamation under the terms of the Boulder Canyon Act to provide water for irrigation and other purposes. Since the water has to be raised from its source to reach the irrigated areas, the irrigation districts requested that the project be designed to permit the installation of power plants as the demand for power increased.

The Imperial Irrigation District constructed generating facilities with a combined capacity of 30,000 kilowatts, to begin operating as

soon as water became available in 1940. Generating facilities and transmission and urban distribution lines costing \$4.7 million have been financed by the Public Works Administration. Rural distribution lines will be financed by the Rural Electrification Administration.

The Nevada-California Electric Corporation has offered to exchange power with the District, with the corporation bearing the expense of the interchange. This would save the District from installing a Diesel stand-by plant to use until the remainder of the power from the All-American Canal becomes available. Any net profit on power activities is to be used to defray a part of the cost of the canal.

C. PARKER DAM

Parker Dam, which is 150 miles below Boulder Dam, was built by the Bureau of Reclamation but financed by the Metropolitan Water District. Although designed primarily to store water for the District, it will also help in flood control and irrigation. The water is purchased from the Boulder Canyon Project at 25 cents per acre-foot. Provision has also been made to generate power, as the project has an ultimate capacity of 120,000 kilowatts. A total of 260 miles of transmission line has been built to supply the Gila and Salt River irrigation projects in Arizona.

The estimated cost of the Parker Dam project is about \$13 million. Title to the power is shared equally by the Bureau of Reclamation and the Metropolitan Water District. Annual revenues from the sale of power, estimated at \$920,000, are expected to amortize in seventeen years the cost of power development, including transmission lines, with interest at 3.5 per cent.

d. THE BONNEVILLE PROJECT

Surveys of the Columbia River were made as early as 1904 and various projects were considered. In 1932 the Secretary of War, in submitting plans to Congress, reported that a unified system of dams from the Canadian boundary to tidewater would provide a major waterway from the Pacific Ocean to the interior of the states of Oregon, Wash-

ington and Idaho, permit the irrigation of large areas of potentially fertile land and create a tremendous new supply of hydroelectric power. The dam at Bonneville was the first of the proposed series to be built.

Funds for the Bonneville project were first allocated in 1933 by the Public Works Administration as part of the federal recovery program. Congress approved the project in 1935 when it appropriated funds for additional construction and in 1937 it authorized its completion. Construction was supervised by the Army Corps of Engineers.

Bonneville has a spillway dam 64 feet high and 1,090 feet long, navigation locks and a powerhouse having two generators with a capacity of 43,200 kilowatts each and eight which will have a capacity of 54,000 kilowatts each. According to present plans, by December 1943 the federal government through Bonneville and Grand Coulee will have a generating capacity of nearly 1.2 million kilowatts. Construction has been speeded up at both projects because of the demand for power for war production.

Construction costs for the fiscal years 1934 to 1940 inclusive totaled \$72.9 million, of which \$57.2 million was expended for the dam, powerhouse, locks and other structures and \$15.7 million for transmission lines, substations, etc.

While the power facilities of the project were constructed and operated under the supervision of the Army Engineers, the power is marketed by the Bonneville Power Administrator. In 1940 the President also appointed the Bonneville Administrator as agent for the marketing of Grand Coulee power. Bills were introduced in Congress in 1940 and again in 1941 to create a permanent Columbia Power Administration for the marketing of all power from Bonneville and Grand Coulee.

Pricing Policies

Up to June 30, 1938, when the Bonneville project was ready to begin operation, total costs amounted to \$53.2 million, allocated as follows: \$9.2 million to facilities providing power only, \$5.5 million for navigation only and \$38.5 million for joint facilities for power and navigation.

In setting the price of power at that time, the Federal Power Commission was directed to apportion the total investment between power and navigation. It first decided to allocate to power 32.5 per cent of the \$38.5 million investment in joint facilities, and the remainder to navigation. This decision would have resulted in a total charge to power of \$21.7 million, \$12.5 million of which would have represented power's share in the joint facilities, and \$9.2 million of which was the cost of facilities providing power only.

Since only one fifth of the ultimate generating capacity was then in place, however, the Commission found it unreasonable to load the price of power with its full share of 32.5 per cent of the joint power and navigation investment. The Commission therefore temporarily allocated to power only one fifth of the 32.5 per cent (or 6.5 per cent of the \$38.5 million cost of joint facilities), leaving the remaining four fifths to be brought into the rate base as additional generators were installed. The resulting figure of \$2.5 million, plus the \$9.2 million investment in facilities providing power only, established the initial rate base at \$11.7 million instead of at \$21.7 million.

Schedules subsequently submitted to the Commission followed the principle of uniform wholesale rates throughout the transmission area. Since Congress had failed to specify the period of amortization or to require the payment of any interest on its investment, the Administrator used his discretion and adopted a forty-year amortization period and a 3.5 per cent interest rate.

Rates for Bonneville power were fixed in 1938 but were revised during 1939, so that the schedules for prime power in operation at the end of 1939 were briefly: at site, \$14.50 per kilowatt per year; transmitted, \$17.50 per kilowatt per year; optional, 75 cents per kilowatt per month, plus 2.5 mills per kilowatt-hour. Dump energy was 2.5 mills per kilowatt-hour. Secondary power rates, adopted in 1938, were withdrawn because true secondary power would not become available until after more than four generating units had been installed. The rate schedule included a maximum price of 5 mills per kilowatt-hour to co-operatives and public systems for a development period of two years.

Following the Congressional requirements, the Administrator has

adopted a policy of controlling retail prices so that savings resulting from wholesale purchases of Bonneville power shall be passed on to the ultimate consumers. But no contract yet executed with a private utility contains any specific provision regarding resale prices, although certain contracts contain basic principles of operation of publicly-owned power plants.

Some public systems have now contracted for Bonneville power, but since not many have acquired or built distribution systems, only a few retail rate schedules are available. The ten public distributors in December 1940 resold power at domestic rates which compared favorably with those of both public and private systems in the Northwest.

Marketing Policy

Congress formulated Bonneville marketing policy more explicitly than its price policy. The Administrator must "give preference and priority to public bodies and cooperatives." Public bodies are given a permanently preferred status and all contracts with private utilities provide for cancellation upon five years' notice "if, in the judgment of the Administrator, any part of the electric energy . . . is likely to be needed to satisfy the requirements of . . . public bodies or cooperatives."

By December 1939 virtually all the power available from the two generators then installed at the Bonneville powerhouse was being sold. Revenues are expected to increase rapidly until, in 1947, the estimated annual revenue from Bonneville and Grand Coulee power should reach \$19.3 million (plus or minus \$3.2 million).

During its first operating year private utility companies were the most important customers of Bonneville power. Industrial demand has since grown rapidly and Bonneville's power is now largely committed to industries for war production. At present there are 44 public utility districts, 40 municipal utilities and 50 cooperatives in the Bonneville-Grand Coulee area, and 34 of these public agencies had contracts with the Bonneville Administrator in October 1941. But sales to public systems have encountered difficulties. Municipalities fear that wholesale purchases of power may reduce them in time to distribution agencies

only. The Tacoma and Seattle municipal hydroelectric systems are almost as large and as efficient as Bonneville. They have, however, made interchange and stand-by contracts. This will increase the firm power capacity of the entire territory since Bonneville reaches maximum capacity during the low water season at Tacoma and Seattle, and the city plants operate at a maximum capacity when Bonneville generators lack sufficient head of water for maximum production.

The principal remaining outlet for Bonneville power may be local public distribution systems which may displace private utilities. Since the project has been in operation widespread efforts have been made to establish public utility districts in the states of Washington and Oregon. By 1940 twenty-five districts had been established by popular vote in Washington, and five in Oregon, but operations were hindered by legal complications. By the end of October 1941 the Bonneville Power Administrator had executed contracts with ten public utility districts in Washington and two in Oregon.

The Power Administrator has made some arrangements to transmit power over private lines, but companies cannot be expected to permit the use of their lines to facilitate the capture of their own customers, nor to sell their transmission facilities without their generating equipment. The simplest solution may be for the Bonneville Power Administrator to buy out some of the private systems, break up their distribution facilities, sell the parts to local public agencies and retain the generating and transmission facilities. Such a procedure was provided for in bills introduced in Congress in 1940 and again in 1941. These would also authorize the Administrator to issue revenue bonds to finance such purchases. The uncertainty on this point makes it difficult for the Power Administrator to determine the extent and nature of the transmission system he should build.

Evaluation of the Bonneville Power Policy

The local effect of the Bonneville project on private utilities depends in part upon its contribution to the generation and transmission facilities in the area. After a decline between 1929 and 1933 consumption increased between 1933 and 1937 at a rate equivalent to about 100

per cent every five and one half years. Aside from Bonneville, generating capacity in the region as a whole increased between 1932 and 1938 at a rate equal only to 100 per cent every twenty years. The Administrator therefore concluded that "under present (1938) conditions the growth in consumption is far outstripping that of installed capacity." The Administrator inferred that the slow growth in private capacity justified Bonneville's existence, but it might be said with even more truth that Bonneville's existence justified the slow growth of private facilities.

More important is the rapid growth in the demand for power. Average domestic consumption is already higher here than in most other parts of the United States. Further increases are expected and the Administrator's reliance upon the development of new electro-metallurgical and electro-chemical industries as a potential market is beginning to bear fruit.

Construction of the Bonneville and Grand Coulee projects has resulted in almost complete cessation of private utility investment in new generating facilities in the region, but it has not affected existing capacity, nor does it need to do so. The Administrator has announced that he will use the federal system as a supplement to existing generation and transmission facilities and that he will try to protect investment in private transmission facilities. This policy may obstruct the sale of power to public distribution systems. But the construction of additional transmission lines by the Administrator to obtain access to customers may not represent wasteful duplication since the area needs more lines than are already in existence.

The Administrator estimates that present rates will eventually more than cover amortization and interest payments on the investment allocated to power, as well as cover all operating and maintenance expenses. Whether the rates are sufficient to reimburse the federal government for its power investment depends partly on the reasonableness of the 32.5 per cent of joint costs allocated to power by the Federal Power Commission. (See page 151.) No definite and generally acceptable economic principle exists to guide the Commission. If the Administrator's estimates prove conservative, and if depreciation of the fa-

cilities is ignored in view of their amortization, the rates should cover all power expenses and amortization in forty years, with interest at 3.5 per cent, even if the investment in power were increased from \$21.7 million (the amount originally allocated to power) to \$53.3 million, which was the cost of the entire project. Under these conditions the Commission could not be charged with subsidizing power through an unfair allocation of joint costs. But if the Administrator's estimates should prove optimistic, it will be difficult to decide at what point power can be said to be subsidized. Also, it is difficult to determine whether these estimates of future revenues allow sufficiently for the effect on rates of large blocks of power which will shortly come to the market from Grand Coulee.

Retail rates of private systems in the Northwest may be influenced by: (1) the price Bonneville charges for power, (2) the conditions it may eventually attach to its wholesale contracts and (3) the retail rates it may induce public distributors to offer. These factors already seem to have induced substantial rate reductions. The Bonneville wholesale rates should in themselves bring savings to private systems in the region, if retail rates are not correspondingly forced down. But if regulatory authorities, the Bonneville Administrator and public opinion (which has been stirred up against private utilities in the region) should force rate cuts, the companies may suffer reductions in net revenues, at least temporarily.

Most business interests in the region approve the Administrator's efforts to attract new industries for the consumption of Bonneville power, rather than the practice of selling it to existing industries already buying from private systems. But to the extent that private utility companies require Bonneville power to meet their own demands, they do not object to the project. They contend, however, that all of the power should be distributed through their facilities. Although under the Bonneville Act the Administrator cannot restrict his sales to private distributors, he can choose between active promotion of public agencies and passive sales to such agencies when they are formed. The present Administrator seems to have compromised by rendering advice and assistance to public agencies without directly promoting them.

In general the Bonneville project illustrates the repercussions of depression policy upon the public ownership of hydroelectric projects. Construction began with PWA assistance as a recovery measure. The Bonneville project expresses the willingness of Congress not only to authorize the public operation of hydroelectric plant but also to market power through public transmission lines. Congress specifically gave preference to the distribution of electricity by local public agencies and thereby made the private utilities apprehensive of their future markets. But no attempt was made to use electricity to subsidize other federal activities. The cost of joint facilities was to be allocated and the price of power was to be high enough to pay all current costs and to amortize and pay interest on the investment in power facilities. All the cost of improving navigation was to be met out of the federal budget.

This policy has exerted a downward pressure on the price of electricity in the area although not on the profits of the private companies. Apparently this is not the result of unfair allocation of the investment for multiple purposes, since present Bonneville rates may be high enough to amortize the investments in both power and navigation. But the project has stimulated widespread efforts to displace private with public distribution, and this trend, rather than the building of the dam and power plant, is the source of criticism by private companies.

The uncertainties which disturb private interests are due in part to the reorganization of the machinery for distribution. The organization of distributing agencies rests mainly on public opinion and the attitudes of the private systems. Differences in public opinion in different localities, whatever their source, create unusual difficulties in organizing an efficient regional electric system. They also pose serious problems of transition from private to public operation.

e. COLUMBIA BASIN PROJECT (GRAND COULEE)

The construction at Grand Coulee is the result of continued efforts to use the Columbia River water for irrigation. The Bureau of Reclamation concluded that this purpose could be most cheaply provided by building a dam high enough to produce the power necessary: (1) to lift the water into a large reservoir from which it could flow by gravity

to the lands to be irrigated and (2) to provide revenues for financing the project.

The only part of the Columbia Basin project now authorized is the Grand Coulee Dam on the Columbia River near the northern end of the Grand Coulee River, ninety-two miles by highway northwest of Spokane, Washington. Funds were first provided by the Public Works Administration and the project was specifically authorized by Congress in 1935 to control floods, regulate the flow of the stream, provide for storage and delivery of water for the reclamation of public lands "and for the generation of electric energy as a means of financially aiding and assisting such undertakings." By the end of 1939, \$69 million had been appropriated for the work.

The project consists of a dam 4,300 feet long at the crest and 450 feet high from its foundation, so as to raise the river about 355 feet above its low water level and create an artificial lake 150 miles long extending to the Canadian boundary. The dam was completed in 1941. Powerhouses will be situated at both ends of the dam. One of these is now being built and the foundation for the other has been laid. Together they will ultimately have a capacity of 1.9 million kilowatts, consisting of eighteen turbo-generators, each rated at 108,000 kilowatts. Under the accelerated program to meet war needs the installed capacity at Grand Coulee will reach 972,000 kilowatts by May 1944.

No final plans have been made for the administration of the project. It is evident that the marketing of power from Grand Coulee and Bonneville must be coordinated. The Bonneville Administrator has been charged with this task, pending a permanent organization of the projects on the Columbia River.

Criticism of Grand Coulee centers around the possibility of marketing the additional 7 billion kilowatt-hours of firm energy it will produce for sale. The Bureau of Reclamation has assumed that power can be economically transmitted over a radius of 300 miles from the dam, which includes the state of Washington, northern Oregon and Idaho and western Montana. As the energy generated in this area in 1930 was about 4 billion kilowatt-hours, the 7 billion kilowatt-hours generated at Grand Coulee would add about 175 per cent to the 1930 production of that section. If the power requirements continue to in-

crease in the future as in the past, the demand will reach 20 billion kilowatt-hours by 1955. But in 1938 the federal government began to produce power at Bonneville which will have an ultimate capacity of 518,400 kilowatts. And since both projects will supply the same market their combined effect must be considered.

Effect on the Price of Power

A bill submitted to Congress in 1932 for Grand Coulee followed the main outlines of the Boulder Canyon Project Act. A later bill suggested by the Bureau of Reclamation provided that revenues from power contracts should cover repayment, without interest, of half the cost of the irrigation works. Revenues were expected to defray operation and maintenance costs, amortize the cost of the dam at 4 per cent in fifty years and also amortize half the cost of the irrigation works.

The Bureau relied for a market for power on the growth of demand at approximately the existing price, thus avoiding any charge of undermining the prevailing rates of private companies and municipal systems. Yet this policy probably would have resulted in a slower development of load than if prices had been reduced. The possibility of attracting electro-chemical industries to the Pacific Northwest would have been greatly facilitated by lower rates. The history of the Boulder Canyon project might repeat itself at Grand Coulee. If the Bonneville price policy reacted upon the Boulder Canyon project, it is likely to react more directly upon the price of power at Grand Coulee.

Pending an allocation of costs at Grand Coulee, the Secretary of the Interior has authorized the sale of its power at the same rates as at Bonneville. Congress as yet has given no indication of probable price policies.

Grand Coulee presents two features of special interest: (1) It was born as a typical, though unusually large, project of the Bureau of Reclamation into a world in which new policies were being applied to the disposal of electric power from multiple-purpose projects; and (2) its marketing problems arise partly out of its extraordinary size. The principal question is whether demand can be expected to grow at a rate which will justify the investment in the long run, and attempts to answer this question involve prophecy.

f. FORT PECK

Construction of the Fort Peck project on the Missouri River in Montana was originally financed by the Public Works Administration in 1934 on the recommendation of the Chief of Engineers of the United States Army. Authorized by Congress on August 30, 1935, the dam, said to be the largest earth dam of its kind, is primarily designed to improve navigation on the river by storing flood waters and releasing them in dry seasons. The dam will incidentally assist in flood control and provide additional water for irrigating lands at present available only for dry farming. Although the electric facilities will have an ultimate capacity of 400,000 kilowatts, the initial installation will have a capacity of only 70,000 kilowatts.

The estimated cost of the project is \$122.9 million. Congress required that the power rate (which must be calculated with regard to the incidental nature of the power) shall be prepared by the Bureau of Reclamation but approved by the Federal Power Commission, which will allocate the costs between power, navigation and flood control. The rates must cover the operating expenses of the power plant, including the transmission system and the amortization of the capital investment allocated to power. No power has yet been produced. Critics of the project claim that it is in a sparsely populated farming area and that the nearby towns are all supplied by private systems. Development of a market depends partly on an increase in population as a result of irrigation.

g. THE CENTRAL VALLEY PROJECT OF CALIFORNIA

The Central Valley project is the outcome of investigations by state and federal agencies dating back to 1873, aimed at a better distribution of water in the two great semiarid interior valleys of California. Congress authorized the construction of the present project in 1937. It includes two large dams at Shasta and Friant, with reservoirs, canals, power plants and transmission lines. Up to March 1941, \$73.2 million had been appropriated by the federal government. The entire project is to cost about \$170 million, of which \$158 million is to be repaid

to the federal government out of water and power revenues and \$12 million is a grant for navigation.

The electric generating equipment at the project will have an ultimate capacity of 375,000 kilowatts and will be operated by the United States Bureau of Reclamation. It is also planned to build a steam plant at Antioch at a cost of \$10.9 million to provide about 1.1 million kilowatts there annually. No power will be produced before 1943. The project has no distribution facilities and the policy to be adopted in marketing the power beyond what is needed for pumping has already caused controversy. The ultimate nature of the producing and distributing organization is indefinite. At the end of 1940 both state and federal officials were pushing plans to create a federal regional authority to develop the power and water resources, with distribution in the hands of local public and cooperative agencies.

h. DENISON PROJECT

The Denison Dam on the Red River between Texas and Oklahoma is primarily designed to protect the fertile river valley from floods. Electric power facilities with an ultimate capacity of 125,000 kilowatts and an initial capacity of 75,000 kilowatts are also being provided. The initial installation is expected to produce 138 million kilowatt-hours of firm power annually. The legality of the project has been challenged on the ground that the river is not navigable, but the efforts of the Governor of Oklahoma to suspend activity at the Grand River Dam have been thwarted by a federal court injunction.

The total cost of the project is estimated at \$56.8 million, of which the District Engineer recommends that \$18.6 million be allocated to power and the remainder to flood control. When power becomes available Denison may compete with the Grand River Dam Authority, the Brazos River Conservation and Reclamation District, and the Lower Colorado River Authority, all of them financed by the federal government. It seems likely, however, that the Grand River and Denison projects may become parts of a much larger scheme under a proposed Arkansas Valley Authority.

i. PASSAMAQUODDY

The Passamaquoddy project in Maine is interesting because it was designed to generate power from the tides and because of the engineering difficulties it has encountered. These have been so great that the project is now at a standstill.

In 1934 a project for harnessing the tides was submitted to the Public Works Administration and the Federal Power Commission. Both reported it to be uneconomical. Nevertheless, a special board appointed by the President to reconsider the project reported after eight weeks' investigation that it was feasible. The President approved it under the Emergency Relief Appropriation Act of 1935 and allocated \$10 million from relief funds for its construction by the Corps of Engineers of the United States Army.

Work began in 1935 and some \$6 or \$7 million was spent on preliminary construction employing 5,000 men, mostly from relief rolls. In March 1936 the House of Representatives refused to appropriate \$9 million to continue the work because, as the Committee on Appropriations remarked, the Passamaquoddy project (among others) had never been authorized by Congress. The President then laid Passamaquoddy and the other "unauthorized" projects before Congress but the Senate refused to approve them.

Three different engineering plans have been considered. The largest plan contemplated the use of both Passamaquoddy and Cobscook bays, but this plan would require an agreement with Canada which has not been consummated. A modified scheme, to use only the waters of Cobscook Bay, avoids the necessity for international agreement but would be much less economical than the international plan. A third and much smaller scheme is based on the utilization of two basins on the inner reaches of Cobscook Bay. This would meet local needs fairly cheaply but would become obsolete if the international project were ever undertaken.

An act of the Maine legislature, approved April 15, 1936, provided for the establishment of the Passamaquoddy District Authority with power to buy generating plants and transmission lines and also water

rights. The act establishing the authority terminates at the end of five years unless construction of a tidal power plant has been started by that time, or at the end of ten years if the tidal plant has been started but is not yet in operation. At present no work is being done at Passamaquoddy and no further action by Congress seems likely. But the project still has supporters, and if the Bay of Fundy were to become a naval base for hemispheric defense, Passamaquoddy might again seem attractive.

2. IMPORTANT STATE ELECTRIC ENTERPRISES

The period since 1933 has been marked by the organization of agencies for hydroelectric development by the states of Nebraska, South Carolina, Texas and Oklahoma. All of these have been financially assisted by the Public Works Administration. As of March 1, 1939, 77.7 per cent of all loans and 56.2 per cent of all grants made by the PWA to nonfederal electrical projects were made to these enterprises. In addition the PWA provided funds to the Bureau of Reclamation for some of this work. Most of the projects are multiple-purpose undertakings involving irrigation, flood control or navigation, as well as electric power generation. Since few are yet in operation and none has operated for any length of time, their price policies and methods of marketing are not fully determined. They parallel the Tennessee Valley Authority experience in many ways and have encountered similar problems.

a. NEBRASKA: PUBLIC POWER DISTRICTS

Since 1933 the Public Works Administration has financed a group of projects in Nebraska which will ultimately produce about 480 million kilowatt-hours of firm electric power yearly. Five public power districts were organized before the end of 1933 and approved by the Public Works Administration. Of these, the Loup River enterprise is solely for power, the Platte Valley and Central Nebraska districts are for both power and irrigation and the remaining two are almost en-

tirely for irrigation. Their engineering aspects are similar. Diversion dams direct water into canals running parallel to the river along the bluffs. From the powerhouse the water is returned to the river. All plants have regulating reservoirs which permit adjustment of power generation.

The projects have been severely criticized from an engineering point of view. There has been loss of water by seepage from the canals due to the porous nature of the soil, but time is expected to season the canals and so to reduce this loss. The volume of silt carried by the Loup River necessitated an expenditure of more than \$1 million for settling basins and dredges. The siphon carrying the water under the South Platte River has broken twice. The transmission lines, it has been charged, will not withstand the heavy sleet storms which occur in Nebraska.

The projects have also been criticized on the ground that the rivers are unsuited to power generation. Unusually low rainfall during the last nine years has accentuated the erratic river flow and impeded power production. If water continues to be as scarce as during this period, the Loup River power plant will be able to operate at only one third to one half of its capacity during a large part of the year. The flow in the Platte River varies from nothing to 27,000 second-feet, and although the project can generate 100 million kilowatt-hours a year, none of this energy is firm at present. The Central Nebraska project was planned, however, to include the Kingsley Reservoir, which will store the flood waters of the Platte and regulate the flow of water to the generating station in the Platte Valley and the Central Nebraska works. A transmission system connecting all three will enable them to produce about 480 million kilowatt-hours of firm power annually.

The combined output of firm power by the three projects will represent an increase of some 65 per cent in Nebraska's total production in 1939. The private companies contend that the Nebraska market cannot absorb this power; nor, they say, can public power, which is intermittent and expensive, replace power now generated by private and municipal plants. But when the three projects are completed they will produce a large amount of firm power, and public power district costs may later be reduced.

Marketing Practices

Other factors than price will determine the share of the present market which the districts may gain. New customers for electricity seem likely to appear in rural areas; and if all the farm families in the more densely populated areas in Nebraska were to be served, the demand might reach 100 million kilowatt-hours per year. Yet even this market is not large enough to absorb the power to be produced by the Nebraska projects. The success of the districts in selling to rural areas will depend upon the rate at which distribution facilities are developed, upon the facilities available for transmission and upon the price at which power can be sold. It is unlikely that the rural areas will absorb as much as 20 per cent of the district power. The remaining potential customers are private and municipal electric systems.

The projects may also affect the price of private power, but the principles for determining rates are indefinite. The state power district law requires merely that rates shall be "adequate," "reasonable" and "non-discriminatory." It was intended also that the projects should be able to pay operating expenses and to amortize their revenue bonds at 4 per cent interest. As \$24 million of the \$63 million total estimated cost of the projects was met by a PWA grant, the revenue from both electricity and water must cover amortization in thirty-three years at 4 per cent interest on only about two thirds of the invested capital. No attempt has been made to allocate costs between irrigation and power and no estimates are available of the probable cost if the projects had been designed solely to generate power. Nor is it possible to decide whether or not the power rates as now set will involve a subsidy.

Four of the five projects were delinquent on December 15, 1939 to the extent of \$1.6 million of interest on bonds held by the Public Works Administration and the Reconstruction Finance Corporation. These bonds totaled \$19.6 million. However, the delinquency may give little indication of their ultimate financial prospects. The original cost estimates were \$30 million and the districts are now expected to cost \$63 million. This increase is partly due to engineering difficulties, to injunctions obtained by five private power companies which delayed the construction of the Central Nebraska project for two years and to increased construction costs and delayed receipt of revenues. If the

projects ultimately prove incapable of meeting their obligations out of revenues they may not under the law impose taxes or sell their properties to private interests. The federal government will be compelled to bear the loss.

The public utility districts have not yet displaced private distribution systems, but since July 1940 the Consumers Public Power District (whose directors are the same as those of the Loup River Power District) has acquired distribution properties valued at more than \$32 million. Only two major Nebraska utility systems remain in the hands of private owners.

The districts have also cultivated a market among the thirty-five newly organized rural electrification districts in Nebraska, eleven of which have contracted to buy district power. Sales to rural districts are now small, but if electric rates continue downward, the rural market will probably expand considerably as irrigation encourages an increase in the farm population.

The Nebraska projects are the outcome of years of planning for low-cost irrigation, reinforced by a desire for cheap power. In recent years work for the unemployed has also been a factor in their development. The ability of the districts to cover costs depends to a large degree on their success in acquiring markets. The physical nature of the country, the ineptitude of early planning and construction and the cross-purposes of private and public interests have delayed construction and increased costs. Competition with municipalities for the purchase of private company facilities and with private companies for the sale of power to municipalities are the result of friction developed in a process of reorganization. The power facilities of the state had to be adapted to a new situation in which a large part of the electrical resources are operated by public authorities.

b. SOUTH CAROLINA: SANTEE-COOPER PROJECT

The state legislature created the South Carolina Public Service Authority in 1934 for flood control, navigation, drainage and commerce on the Cooper, Santee and Congaree rivers, and to produce, sell and distribute electric power. Construction began in 1939 and was com-

pleted in 1941. The dam on the Santee River was planned to create two large shallow reservoirs covering altogether about 160,000 acres. The powerhouse has a generating capacity of 160,000 kilowatts and a yearly output of about 700 million kilowatt-hours of energy. The total cost of the project is estimated at about \$45.8 million. The Authority in seeking markets for its power is following the precedent of the Tennessee Valley Authority. (See Chapter 10, pages 181 ff.)

C. TEXAS: LOWER COLORADO RIVER AND OTHER AUTHORITIES

Over twenty projects involving river development have been organized under special acts of the Texas legislature. The Lower Colorado River Authority, the most important, was established in 1934 to develop a unified system of dams on the Colorado River in Texas for flood control, irrigation, electric power development and general reclamation. The project includes four dams — Austin, Marshall Ford, Roy Inks, and Buchanan — and will provide irrigation for 120,000 acres of land. The total installed generating capacity is 127,500 kilovolt-amperes. Even in the worst years there will be available 250 million kilowatt-hours of firm energy, and an additional 50 million kilowatt-hours of dump energy will be available in average years. By April 1940, \$48 million had been approved for investment in the project.

The Authority has contracted for the sale of most of its power and began to sell in September 1939 through private companies and to one municipal system. On September 1, 1939 the Authority purchased one private company's distribution facilities in sixteen counties and it expects to purchase others. It proposed to resell the urban distribution facilities to municipalities, but its policy of lowering retail rates in the communities taken over has somewhat discouraged the operation of distribution facilities by municipalities. The Authority is at present serving a number of municipalities directly.

The Red Bluff Water Control District, an irrigation and hydroelectric development, includes a dam across the Pecos River, a generating station and more than a hundred miles of transmission line. Its installed capacity is less than 3,000 kilowatts. The total cost of the proj-

ect was \$2.9 million, of which the Public Works Administration lent \$2.1 million on general obligation bonds and granted \$783,000 on a nonrepayable basis. The district has defaulted in the payment of \$109,000 in interest and \$40,000 in principal due on its loans.

The Brazos River Conservation District is organized chiefly to control floods, with about twelve dams ultimately projected. Electric power facilities will be installed to reduce the net cost of the work. All electricity produced on this project is to be sold at wholesale to existing distributing agencies.

The Guadalupe-Blanco River Authority has proposed immediate construction of two dams for navigation and flood control, the initial electrical installation to be 3,750 kilowatts. Application has been made for PWA grants and loans covering the entire cost of the project, estimated at \$4.2 million.

The Sabine-Neches Conservation District is also in its early stages. It has applied for PWA funds and the project is reported to be negotiating with privately-owned utilities for the sale of its proposed output.

d. OKLAHOMA: THE GRAND RIVER DAM AUTHORITY

The legislature of Oklahoma established the Grand River Dam Authority in 1935 for the purposes of flood control, irrigation, reclamation and the development of electric power. The dam across the Grand River is 6,565 feet long and is reputed to be the longest multiple-arch structure in the world. The lake behind the dam will cover some 48,000 acres. The power generating facilities, completed in 1941, have an installed capacity of 64,000 kilovolt-amperes, with an annual production of 527 million kilowatt-hours of electricity, of which 200 million will be firm. The cost of the project, \$22.8 million, has been financed by loans and grants from the Public Works Administration.

The Authority has offered to sell half of the output of firm power and all the dump power to two private utility companies; it also plans to buy existing private facilities in ten counties in northeastern Oklahoma. At present it has contracts with one private utility, three municipal systems and two rural cooperatives which, together with those be-

ing negotiated and applied for, will absorb 75 per cent of its output. The Authority regulates the resale price of the power purchased from it by private utilities.

Attempts have recently been made to amend the Oklahoma constitution to permit the formation of people's utility districts embracing several towns or counties, thus increasing the prospective market for federal power in the rural regions.

3. THE ST. LAWRENCE POWER PROJECT

The public development of water power on the International Rapids section of the St. Lawrence River has been discussed for thirty-five years, generally in connection with a waterway from the Great Lakes to the Atlantic. Development has been postponed because of the difficulty of obtaining authorization from the four jurisdictions involved: the Dominion of Canada, the Province of Ontario, the United States and the State of New York.

In 1930 the State of New York created the St. Lawrence Power Development Commission which reported that it would be practicable to construct a dam in the International Rapids area and to generate power. Accordingly, the state legislature in 1931 created the Power Authority of the State of New York, asserting its claim to the potential power on the American side of the river and expressing its willingness to bear a part of the expense of construction. The riparian landowners also claimed power rights and their claim is likely to be litigated.

New York's claim was urged upon the United States Department of State, which was already negotiating a treaty with Canada for the development of the St. Lawrence seaway and for power development in the International Rapids area. The Department of State proceeded with its negotiations without recognizing the claims of New York State. In 1932 the St. Lawrence treaty was signed, but in 1934, despite strong advocacy by President Franklin D. Roosevelt, it failed of ratification in the Senate.

In spite of this setback the New York Power Authority made studies of rates, costs and integration of power on the St. Lawrence. Negotiations for a new treaty were resumed by the national government and by

1940 substantial agreement had been reached with Canada. Foreseeing future shortages of power, transportation and shipbuilding facilities, President Roosevelt on October 16, 1940 appointed the St. Lawrence Advisory Committee, directed it to proceed with preliminary plans in cooperation with a similar Canadian committee, and allocated \$1 million from special defense funds for the task. On March 19, 1941 representatives of the United States and Canada signed a new agreement governing the terms of the St. Lawrence navigation and power development.

The St. Lawrence project includes the deepening of the river channel to permit navigation by ocean-going vessels from Duluth to the Atlantic — a distance of 2,350 miles. The 1941 agreement divides the construction of navigation works between the United States and Canada.

The cost of the development in the International Rapids section is officially estimated at \$266.2 million, of which \$38.6 million is for works solely for navigation, \$96.8 million for power structures and equipment and \$130.8 million for works common to navigation and power. The United States' share is estimated at about \$110 million, the remainder presumably to be borne by the State of New York and Canada.

The seaway has been warmly championed and as warmly attacked, its critics holding that it has serious practical faults and that it is unnecessary and undesirable. The merits of the debate cannot be considered within the bounds of the present survey.

Electric Power Features

The electric capacity to be developed at the International Rapids is 2.2 million horsepower and is to be shared equally by the two countries. Owing to the tremendous storage reservoir of the Great Lakes which equalizes water flow, an unusual proportion of installed horsepower will be primary power, without investment in reservoirs or stand-by steam plants. Of the American share, 70 per cent of the total would be primary power and an additional 12.9 per cent would be high-grade secondary power. The potential annual output is 5 billion kilowatt-hours of primary power and about 700 million more of secondary power.

If available capacity on the St. Lawrence were used in the same way as in the present market for power in New York State — that is, only about 64 per cent of the time — 36 per cent of the available primary power would be wasted. If used continuously, less would be wasted; but the major fluctuations in load would be thrown on the private plants, with a resulting decline in their efficiency unless St. Lawrence power were mainly to be used for new industries with a large and continuous demand for energy.

According to the 1941 agreement, each country is to operate the power works located in its territory, without any rights to the other's facilities. Each country may utilize half of the natural flow of water available for power purposes in the International Rapids. It is not yet decided who is to operate and sell the power on the American side. The New York Power Authority claims the right to generate and market the power.

Assuming that the power will be marketed by the New York Power Authority, the price will probably be determined largely by the provisions of the New York Power Authority Act and by the allocation of costs between the state and the federal government. The state demands that the hydroelectric power "shall be considered primarily as for the benefit of the people of the state as a whole, and particularly for domestic and rural consumers to whom power can economically be made available." Industrial use will thus be secondary. The project is required to be self-supporting and financially assured by contracts for the sale of its power before it is undertaken. The Authority may contract for the sale of power directly to municipalities or political subdivisions, or indirectly through private companies, under contracts insuring low resale rates.

Costs and Prices

Under the treaty of 1932 New York's share of the costs would have been \$89.7 million. This represented the cost of the power works and apparently an arbitrary half of the United States' share of the cost of works common to navigation and power. On this basis the investment per horsepower of installed capacity would have been \$81.57 (\$116.59 per primary horsepower). With interest at 4 per cent, amortization in

forty years, plus depreciation, maintenance and operation expenses, the cost per primary horsepower-year was estimated at \$7.92, or \$10.62 per primary kilowatt-year.

At an 80 per cent load factor, allowing nothing for the value of secondary power, the total cost of generation would be 1.5 mills per kilowatt-hour. It is estimated that even if there were no market for secondary power, St. Lawrence power could be delivered to markets fifty, one hundred and two hundred miles from the site at a 50 per cent load factor "in proportions adaptable to such markets," at an average cost (including transmission) of 4.1 mills per kilowatt-hour. Equivalent power generated in the most modern plants at the load centers was estimated to cost 6.3 mills.

The Power Authority must attempt to market its power through existing transmission agencies, for it cannot construct, own and operate transmission lines to serve public distributors. This virtually requires it to distribute through the operating companies of the Niagara Hudson Consolidated Edison System, which in 1937 sold about 84 per cent of all the power sold in New York State and owns the major transmission lines. The Authority is directed to "make provision" so that municipal and other public agencies may secure a "reasonable share" of the power, either directly or through intermediaries, at a price controlled by the Authority. But it can make such provision only if the private companies are willing to accept the Authority's resale price as provided by law or if it is authorized to build transmission lines to serve the public agencies.

The Power Authority has thus far negotiated no contracts with private utilities. It has unsuccessfully requested legislation authorizing it to construct, own and operate transmission lines, and form public power districts.

The waterway has been vigorously supported by the midwestern and granger states, which seek cheaper transportation for outgoing agricultural and manufactured goods and incoming raw materials and consumers' goods. Several Mississippi Valley states have opposed the waterway on the ground that it would endanger the nine-foot depth of the Lakes-to-the-Gulf Waterway. Opposition to the project, centering in the Atlantic seaboard states, has come from three principal sources: (1) the railroads (including railway labor organizations), (2) lake

carriers and New York canal owners and (3) North Atlantic ports. These elements contend that costs of construction would be excessive, that seaway traffic would not justify the expenditures and that existing transportation facilities are ample.

In recent years the private electric power interests have not supported the St. Lawrence development. Briefly, their objections are: that the power would become available in 1944 or 1945, whereas it is needed now if at all; that power facilities could be provided more quickly by constructing steam plants and by diverting more water to private companies at Niagara; that St. Lawrence construction would cost immense sums and would weaken rather than strengthen the war effort by diverting men and materials from essential industries.

The issues are complex and the basic issue of public versus private development is made more difficult by uncertainty as to the immediate and ultimate needs of production for war and peace.

Chapter 10

THE TVA

THE TENNESSEE VALLEY AUTHORITY is the culmination of a gradual extension of federal responsibility to embrace not only navigation, flood control and strategic materials for national defense, but electric power, relief of unemployment and improvement of living conditions in backward areas. The TVA represents a unification of all these objectives in a single regional program.

The region for this experiment was selected when Congress acted in 1916 to secure a supply of nitrates for explosives during the first World War. Between 1917 and 1920 two nitrate plants were built at Muscle Shoals, together with a steam power plant at Sheffield, Alabama, and Wilson Dam was finally completed in 1925. For fifteen years the properties were virtually idle while Congress debated their disposition.

Some members urged the creation of a government corporation to operate Muscle Shoals as a fertilizer plant; others proposed that the properties be leased to private operators for the same purpose; still others, led by Senator George W. Norris of Nebraska, demanded federal development of the Tennessee River basin for navigation, flood control and the sale of "surplus power." Private industry, unimpressed with the opportunity for fertilizer production in plants already obsolete, was interested in the possibility of cheap power. But private bids for Muscle Shoals were all rejected as inadequate.

Bills similar to the act which finally set up the Tennessee Valley Authority were passed by Congress in 1928 and 1931 but were vetoed by Presidents Calvin Coolidge and Herbert Hoover. The Muscle Shoals Commission, established at the suggestion of President Hoover, subsequently recommended a fifty-year lease of Muscle Shoals and the

construction of Cove Creek (later, Norris) Dam for "navigation, flood control, and incidental power development." In 1930 Congress passed an act that authorized the improvement of the main channel of the Tennessee River to a depth of nine feet by a series of low dams which would have provided little flood control or power. This act also permitted private interests, municipalities or states to substitute high dams for power and other purposes and pledged the federal government to contribute the estimated cost of any low dams thus eliminated. But no southern public authority, industry or utility showed interest in the proposition.

Objectives of the TVA

By 1933 Congress accepted Senator Norris' basic principle of a unified multiple-purpose development of the Tennessee River and passed an act to set up the TVA. The controversy between those who advocated public operation and those who favored subsidized private interest was at last resolved in favor of federal operation. One of the chief arguments for the TVA was that it promised to alleviate the alarming economic conditions which ushered President Franklin D. Roosevelt into office. The project was presented as part of a program to increase wage payments and to stimulate the capital goods industries but it was also a unique experiment in regional planning.

President Roosevelt stated that its use "if envisioned in its entirety, transcends mere power development: it enters the wide fields of flood control, soil erosion, afforestation, elimination from agricultural use of marginal lands, and distribution and diversification of industry. In short . . . national planning for a complete river watershed involving many states and the future lives and welfare of millions."

Aids to navigation and flood control have long been policies of the federal government. The production and distribution of fertilizer, the arrest of soil erosion, the scientific use of the soil, the analysis of mineral and other resources and associated social and economic services are also extensions of functions which have long been performed in varying degrees by government departments; but the Act setting up the TVA introduced a new principle by unifying these activities under a

single regional agency. The decision of Congress to sponsor the federal generation and sale of power, even of incidental or surplus power, at contractually controlled resale rates, also broke sharply with precedent.

The purposes of the Tennessee Valley project were declared in the Act to be: "(1) the maximum amount of flood control; (2) the maximum development of said Tennessee River for navigation purposes; (3) the maximum generation of electric power consistent with flood control and navigation; (4) the proper use of marginal lands; (5) the proper method of reforestation of all lands in said drainage basin suitable for reforestation; and (6) the economic and social well-being of the people living in said river basin."

Powers and Duties of the Authority

To administer this broad program Congress set up the Tennessee Valley Authority, an agency with the prerogatives of government but the flexibility of private business. The Authority was made a corporation, with a board of three directors appointed by the President with the advice and consent of the Senate for terms of nine years. As a federal agency it may exercise powers of eminent domain and operate without supervision by state or federal regulatory commissions.

The Act clearly makes the generation of power a secondary purpose of the TVA. In selling power, the Authority must "give preference" to public and cooperative bodies "not organized or doing business for profit." To encourage the maximum use of electric light and power, it may construct or acquire existing facilities. It is further authorized to construct, lease or purchase transmission facilities and to interconnect with other systems. If a public or cooperative agency constructs and maintains proper transmission facilities either to one of the TVA generating plants or its main transmission lines, the Authority must serve it irrespective of distance. All contracts for the resale of power must provide against discrimination between ultimate consumers of the same class. A schedule of maximum resale rates, fixed by the Authority, may control all energy sold by it except the mutual exchange of excess power for the conservation of stored water, emergency or breakdown. The Authority may also extend credit to public agencies for periods up to

five years to enable them to acquire, improve or operate existing distribution facilities, including generating plants.

The Act required that the power project be made "self-supporting and self-liquidating" as soon as possible. Surplus power was to be sold at rates which "when applied to the normal capacity of the Authority's power facilities will produce gross revenues in excess of the cost of production of such power." The Authority has interpreted this to mean that rates should cover not existing but potential costs at reasonably full utilization of capacity.

The TVA program is, from a broad point of view, a measure of national defense. The theory behind it has been that navigation, flood control and power generation in a region far from possible attack by an enemy and rich in raw materials, all contribute to more effective national preparedness against an enemy.

The Physical Setting

The TVA area is usually defined as the drainage basin of the Tennessee River. Within its 40,600 square miles live some two million people, the largest concentrations of population being at Knoxville and Chattanooga, both of them cities of more than 100,000. Whatever its potentialities, this region was far from prosperous before the TVA was established. When the program was initiated the area was well below the national average (and even below the average for the southeastern states) in spendable income, standards of living and opportunities for productive employment.

The western half of the basin is predominantly agricultural, with the notable exception of phosphate rock reserves. Corn, wheat, oats, peanuts, potatoes, livestock and other products are standard crops, but only cotton and tobacco are produced in excess of local needs, and the area is seldom independent of at least some outside agricultural produce. The eastern basin contains minerals and industrial resources. An important manufacturing region has already developed above Knoxville. Heavy rainfall and steep gradients make the Tennessee a turbulent river and floods have been one influence retarding the economic development of the area.

The Tennessee Valley Authority was required to design and con-

struct a system of dams that would provide a nine-foot navigable channel on the main stream from Knoxville to Paducah, maximum flood control for the Tennessee basin and the lower Mississippi Valley and maximum power consistent with these primary purposes. On March 31, 1936 the Authority suggested to Congress a plan for the unified development of the Tennessee River System through the construction of seven dams on the main stream and three storage dams for the major tributaries. The initial plan provided for no initial navigation facilities on the tributaries, for installed capacity of less than 1.5 million kilowatts, and continuous power of less than half a million kilowatts, but for controlled storage in excess of 10 million acre-feet. The estimated cost was roughly half a billion dollars.

The TVA, still largely in the construction phase, has one of the largest construction organizations in the country. Of the nineteen dams now included in the system only two (Wilson and Hale's Bar) were acquired by the TVA. Five main river dams and three dams on tributaries were completed by January 1942, leaving two main stream dams and seven dams on tributaries to be constructed or completed. But the completion of these plants will not necessarily bring construction to an end. Surveys are constantly being made and the program is one of indefinite expansion. Substantial economies have been effected by concentrating construction in a single agency.

The actual total cost of the first six of these dams constructed was less than the estimated cost:

Project	First Estimated Cost	Adjusted Estimate for Changes in Scope (In Millions)	Actual Construction Cost	Amount of Over-estimate
Norris	\$36.0	\$31.3	\$30.8	\$.5
Wheeler	32.1	33.1	31.9	1.2
Pickwick Landing	32.5	30.7	29.8	.9
Guntersville	29.5	35.6	31.1	4.5
Chickamauga	31.7	38.1	34.7	3.4
Hiwassee	15.3	18.6	17.0	1.6

TVA Capacity

Initial capacity provided for at the ten dams acquired or constructed by TVA by January 1942 totaled 836,600 kilowatts. The ultimate capacity at the same dams will be about 1.9 million kilowatts. Ultimate capacity for the entire nineteen-dam system is estimated at 2.3 million kilowatts.

In the process of securing a market for its power, TVA has acquired 140,600 kilowatts of hydroelectric plant from private utilities. But TVA has ceased to be a strictly hydroelectric system. It has acquired over 109,000 kilowatts of miscellaneous steam plant and contracted for further power from the Memphis Generating Company, along with the 60,000 kilowatt capacity of the Sheffield steam plant, which was transferred by the War Department at the same time as Wilson Dam and the nitrate plants at Muscle Shoals.

At the end of the fiscal year 1940 the Authority operated 4,691 miles of transmission lines. Despite the acquisition of transmission lines through the purchase of property, the major layout has been constructed by the Authority itself.

By June 30, 1940, \$313 million had been invested in the TVA, of which about \$189 million was attributable to power. Congress appropriated \$270 million for the project and \$61 million was raised by issues of bonds or Interim Certificates. This left — beyond the \$313 million already expended — nearly \$18 million held by the Authority in the form of cash as of June 30, 1940.

The possible legal obstacles to extensive complementary steam construction do not apply to interconnection with the surrounding utility companies. The advantages, especially of connection with predominantly steam electric utilities, are considerable. TVA has made several interchange agreements with industrial companies and surrounding utilities, but few, if any, have been negotiated primarily with the object of firming low-grade power. It has been estimated that firming the total peak load of about 1.2 million kilowatts in the ten-dam system through interconnection and interchange would add over \$2.5 million to the TVA's net earnings from power in a normal year. Firming by construction or acquisition of supplementary steam systems would add over \$3 million.

Price Policies of TVA

The TVA's price policy is distinguished by two characteristics: (1) rates are determined with regard to cost at full utilization of capacity and (2) rate schedules are low, simple in form and few in number. This is in sharp contrast to the bewildering multiplicity of rates and rate forms of the private systems which have already been described.

Equipped with government funds to finance an unprofitable development period, and free of interest charges, the Authority could test the effects of rates and sales conditions upon both demand and costs. Thus it challenged the traditional practice of private systems of waiting for consumption to increase before reducing costs.

Rates were first announced on September 14, 1933 and took definite form within a few months. The Board of the Authority approved the schedule of wholesale rates on October 16, 1933. The proposed resale residential rates were finally adopted in a power contract approved November 13, 1933. With minor refinements and some additions, these schedules form the standard TVA schedule.

The rates were based on estimated revenue at the end of the development period and average costs when consumption had fully responded to the rates. The wholesale power rate was designed ultimately to produce average revenues of about 4 mills per kilowatt-hour. TVA rates were not, however, drawn out of a hat. Operating data were available from past generating experience at Wilson Dam, and from the results of operation under low rates in public plants like that at Tacoma, Washington, together with the results of an exhaustive three-year study of the cost of distributing electricity made by the New York State Power Authority.

The continuous power output of the system is determined by the effective head of water and turbine efficiency at each plant, and the minimum water available during the greatest droughts, adjusted for diversity. Substantially more firm power can be sold because the seasonal variations in demand for electricity correspond to some extent with the availability of water.

But continuous power is not the only kind which TVA markets. A second grade of power sold is known as "interruptible power." It may be interrupted at the discretion of the Authority for limited peri-

ods, explicitly defined by contract, in each calendar year. A third grade or "secondary power" is also sold. This is assured for a specified proportion (usually 75 per cent) of a certain time period, usually ten years, but there is no guarantee of power in any given year. Finally, unpredictable contingencies in water releases provide "dump power," the sale of which at short notice is entirely within the discretion of the Authority. Dump power is seldom useful to industrial customers but it can be sold to or interchanged with other electric utilities.

The Authority's rates for direct sale vary with the type of power sold. Firm prime power is sold at the standard wholesale rate. Interruptible power, secondary power and dump power are sold at prices based on the value of each to the customer, on the one hand, and the cost of "firming" the power on the other hand.

The basic wholesale rate consists of a demand charge (90 cents per kilowatt per month), plus an energy charge. The energy charge is in conventional block form with perhaps a smaller than usual differential between large and small customers, and between high- and low-load-factor customers. The most notable features of the residential schedule are its low level and its availability to rural as well as urban customers. With slight variations depending on monthly consumption, the TVA rate has reduced monthly bills — computed from the 1932 rate schedules of the nine outstanding utilities in the Southeast — by 40 to 60 per cent for consumptions up to 500 kilowatt-hours.

Like the wholesale rate, the basic residential schedule owes little to direct cost analysis. It was formulated primarily to stimulate the use of electrical appliances.

The TVA started with four basic resale rates to cover residential, commercial, industrial and street lighting services, with substantial reductions from private utility levels for each. No specific criteria of class differentials were developed. Yet a comparison of the proportion of gross and net revenues contributed by the different types of consumers or distributors operating under roughly similar circumstances, indicated disproportionate profits from commercial and industrial business. A fundamental revision in these rates was consequently made in September 1938.

All resale rates are net, subject to 10 per cent increase if unpaid

within ten days from date of bill. They are also subject to a surcharge for development. Amortization surcharges may also be added. However, these are not strictly charges for electricity but a contribution to capital to increase the security for loans. Only the wholesale power and resale rates of a particular distributor therefore are truly uniform area rates.

How the Power Is Marketed

As the Tennessee Valley was already served by private systems, TVA power could have been marketed: (1) by selling to existing utility companies, (2) by duplicating their facilities or (3) by purchasing their properties and reselling their distribution equipment to public bodies.

The TVA was required to give preference to public nonprofit organizations over an area limited only by "feasible" transmission distances. It was prevented by statute either from continuing to sell for resale to existing public utilities or from disposing of firm power in bulk primarily to large industrial customers.

The authority of the TVA to purchase or to construct transmission facilities at its discretion was a threat to private interests. Also, the TVA realized that duplication of existing systems is wasteful and therefore sought to purchase them. The Authority based its offers to purchase on the original cost of the properties as determined from an audit of their accounts by a New York firm of accountants. Accrued depreciation was computed after a field survey by the Authority's engineers and deducted from the original cost. Since the cost of most materials and labor had fallen after installation, the Authority contended that the price which it offered exceeded the cost of reproduction and included compensation for intangibles. The private systems refused to accept this basis of negotiation, demanding prices based on earning power.

The price finally paid by the TVA generally exceeded its first offer. From its point of view these increases represented payment for the nuisance value of the plant. Not only was duplication of facilities thereby avoided, but the loss of revenues and social advantage incidental to the delay in acquiring a market were minimized.

Difficulties Encountered

A contract was signed with the Commonwealth and Southern Corporation and its subsidiaries on January 4, 1934, but the transfer of some of the properties — notably those of the Alabama Power Company — was delayed by stockholders' suits. The Alabama Power Company finally conveyed the property it had agreed to sell to the Authority. But only two of the fourteen municipalities involved in the original contract eventually purchased local distributing facilities from the company to market TVA power. The attempt to secure a market in the territory of other subsidiaries was equally disappointing. Negotiations between Knoxville and the Tennessee Public Service Company failed and Knoxville and other cities proceeded with plans for the construction of duplicate facilities for distributing TVA power.

Litigation delayed the orderly and efficient marketing of TVA power for more than four years. The successful end of the litigation in January 1939 removed the obstacles for negotiations for the acquisition of a market. Unable to avoid public competition, the private utilities capitulated and transferred their properties to the TVA. The present distribution area is expected to absorb all power likely to be available at the dams now contemplated, and for the present at least, the competitive phase of the Authority's development seems closed.

Extension of TVA's rural market has been hindered not only by the opposition of the power companies but also difficulties inherent in achieving economically balanced service areas. The lowest distribution costs can be secured only in properly designed market areas but the TVA is not legally able to work them out. It has no clear legal right, for example, to refuse service to a municipality. Also, local jealousies, municipal self-interest, and lack of faith in rural electrification, combined with the pressing need of the Authority for immediate sales outlets, have obstructed the economic planning of distribution areas.

The prolongation of the development period by litigation compelled the TVA to sell most of its power to private utilities and large industrial customers, and for government and interdepartmental uses until it was free to develop its public market. But by 1940, 47 per cent of the power sales were to municipalities, to cooperatives, and direct to

rural customers. Sales to public agencies for resale were greater in 1939, both in energy and revenue, than for the entire period of TVA's existence through June 30, 1938.

The power activities of the Authority have been limited by the fact that its dams and reservoirs must be used primarily to provide for navigation and flood control. Multiple purposes are not incompatible with economical power supply but they do restrict the amount and lower the quality of the power available.

There is a broad consistency among the three purposes — continuous navigation, flood control and power production — but there are also basic conflicts. To draw down reservoirs in preparation for expected floods often requires water releases beyond the amounts which can be passed through the turbines or are needed for power. From the point of view of power generation water thus released is wasted capital investment. Flood control may also require storage in excess of what is needed for power alone. Moreover, the possibility of floods late in the rainy season prevents the complete filling of a multiple-purpose reservoir before the coming of the dry season, thus reducing the firm power output for a given installation as compared with a single-purpose undertaking.

These inherent conflicts may be minimized by detailed knowledge of past, current and imminent water conditions. They also tend to diminish as dams, especially storage dams on the tributaries, are added to the system.

The Operating Record

Installed capacity of the TVA has been increased from 184,000 kilowatts in 1934 to 724,000 kilowatts in 1940. Present plans will eventually bring its capacity to more than 2 million kilowatts, of which some 1.5 million may be firm power. But even this total is substantially less than the generating capacity of New York City plants alone, and is only about 16 per cent of the installed capacity as of 1937 within a 300-mile radius of TVA plants.

The potential market within this radius includes nearly a quarter of

the nation's population and thirty-eight of its largest cities, including seven metropolitan centers with populations in excess of 300,000. The region accounted for almost 12.3 million kilowatts of generating capacity in 1937 — more than one third of the installed capacity in the United States — of which about 75 per cent was in steam generating units. Opportunities for system interchanges seem vast relative to potential TVA capacity.

The consumption of power in the TVA area has grown much faster than in the nation as a whole. In fact, the rate of increase since 1934 in the four states most directly affected by the Authority — Tennessee, Alabama, Georgia and Mississippi — was greater than anywhere else. Recession from 1929 levels was not as pronounced and recovery was more rapid and more stable among the utilities in this region. The TVA system peak output rose from 184,000 kilowatts in 1938 to 368,000 kilowatts in 1939, and the highest demand occurred in June, the last month of each fiscal year.

The operating results of the TVA are interesting mainly as a basis for deciding the question as to whether the Authority and its distributors are likely to cover their costs at present power rates. But no final answer can be given. The costs fairly to be allocated to power are disputed and, in the final analysis, are incapable of calculation. Also the record of the past few years forms a poor basis of prophecy, since TVA's revenues from power were seriously curtailed by the difficulties of securing a market.

The cost of generation in 1940 as calculated by the TVA averaged (including depreciation) .66 mills at multiple-purpose hydro plants and .82 mills at single-purpose hydro plants. At steam plants, however, costs were about 4 mills and at internal combustion plants about 11 cents.

Up to the end of the fiscal year 1938 the TVA suffered a net loss on its power operations. The aggregate net loss for the five years ending June 30, 1938 was \$748,665. But since then TVA operations have shown a substantial surplus. While total direct and allocated expenses were higher by 52 per cent in 1939 than in 1938, power revenues had more than doubled. Indeed, revenues were almost 83 per cent of the aggregate revenues of the preceding five years. The net income of

nearly \$1.5 million in 1939 wiped out the net losses of previous years and provided a net surplus of \$895,000.

The Authority expects its rates to provide revenue at least 12.5 per cent over and above all costs at reasonably full use of facilities. This margin on the wholesale rate is the TVA's answer to the charge that it subsidizes or discriminates in favor of its customers. The margin was approximately the average paid in taxes by electric utilities throughout the country at the time the TVA was established. Taxes, like interest, are included as residuals in the power costs. The wholesale rates, according to these estimates, will provide net revenues to meet interest costs and tax equivalents with the full use of available power in the completed ten-dam system.

In the original Act, Congressional policy concerning payments in lieu of taxes was perfunctory and political to gain the approval of Alabama and Tennessee to the TVA project. The Norris-Sparkman Bill, sponsored by the TVA, which became law on June 26, 1940, provides for bona fide payments in lieu of taxes. This Act provides for payments to the states and local governments of a percentage of TVA power revenues in lieu of taxes. These payments start at 10 per cent during the fiscal year 1941 and are gradually reduced until they are stabilized in 1949.

Attempts have been made to adjust the estimated income to discover whether the TVA wholesale rate will cover the Authority's costs. Although the net income in 1939 wiped out the net expenses of preceding years, the engineers of a Joint Congressional Committee investigating the TVA calculated that, if allowance were made for workmen's compensation, interest during construction, taxes and insurance, interest after construction, depreciation and amortization, the accrued development loss through 1938 totaled over \$10 million and that through 1939 it would aggregate \$11.3 million. The maximum accumulated development loss ultimately to be amortized was estimated around \$13 million. This has been estimated to be equivalent to less than nine years' normal surpluses with the seven-dam system and five years' surpluses with the ten-dam system. Under normal operation there seems little reason to doubt that the established wholesale rates will eventually liquidate all direct, reasonably allocated and imputed power costs.

Retail Margins Are Low

The most dramatic effects of TVA operations are shown in the distribution of power. The record of sales proves that electricity can be profitably distributed at almost unprecedentedly low retail margins, even in small, economically backward areas. While the average annual consumption per residential customer in the United States as a whole rose from 629 kilowatt-hours in the calendar year 1934 to 925 kilowatt-hours in 1940, the seven original TVA distributors (two municipalities and five cooperatives) almost doubled their average, raising it from 811 kilowatt-hours in the fiscal year 1935 to 1,553 kilowatt-hours in 1940. The 1940 averages in this group ranged from 997 to 2,090 kilowatt-hours. For all TVA distributors, average annual residential use reached 1,179 kilowatt-hours in 1939 and 1,331 in 1940. Total consumption usually rises sufficiently to permit distributors to show a profit within three years, and sometimes by the end of the first year. Commercial business has grown at about the same rate as domestic business, and industrial power consumption is a substantial part of the total sales of most distributors.

Distributors' Finances

The financial results of the operations of TVA distributors have been impressive. Contractors as a group realized in 1939 a net surplus (above expenses, including depreciation, taxes, interest and return on investment) of over \$591,000, or almost 14 per cent of gross revenues; in 1940 it was over \$4 million, or almost 19 per cent of gross revenues. In the latter year 74 municipal contractors reported combined net incomes of over \$3.9 million. The cooperatives have not fared so well: 13 showed aggregate net losses for 1939 of \$141,309, and 8 total surpluses of about \$117,000. In 1940, 15 cooperatives reported net losses totaling \$149,000, and 17 aggregate net earnings of \$261,000.

The report for June 30, 1940 reveals a remarkable increase in both the number of TVA distributors and their total assets. Taking total depreciated assets, less current liabilities, as a rough measure of the total capital of TVA distributors, we find it aggregated almost \$21 million at the end of the fiscal year 1939. Of this amount, almost 86 per cent was represented by long-term debt. In 1940 the corresponding figure

was \$92 million, of which about the same percentage was long-term debt. The ratio of current assets to current liabilities had improved, while the fall in depreciation reserves ratio was largely due to the acquisition of private utility properties. Although the ratio of long-term debt to capital was practically unchanged, widespread financing through the sale of electric revenue bonds increased this source of capital to 68.9 per cent (including bonds held by PWA). There was also an apparent substantial increase in the proportion of capital represented by federal grants: from 2.7 per cent in 1939 to 7.2 per cent in 1940. However, \$3.2 million of the \$6.6 million added during the year represented grants by new TVA distributors.

Are Subsidies Involved?

It has been widely supposed that TVA operations have involved subsidies. Yet there is nothing in the accounting relations between TVA and its contractors to suggest a subsidy. The Authority has charged its distributors for services performed at their request, and has insisted that they, in turn, charge all properly applicable expenditures to power operations. The only TVA operations that even resemble subsidies are low wholesale power rates, services supplied directly or indirectly by TVA, or subventions or services contributed by other federal agencies.

The Joint Congressional Investigating Committee concluded that the Authority was underselling the market for privately generated power by perhaps a mill or two, if at all. It found also that the reductions in resale rates were so large that subsidization of local distributors in the wholesale rate could be disregarded. But a one or two mill subsidy in the wholesale rate, although a small fraction of actual resale rate reductions, would have more than a negligible effect on the operating results of the distributors.

The TVA may have "subsidized" its distributors by performing services for them for which they did not pay. Officials of the TVA Department of Operations are actively, if informally, engaged in various forms of promotional and supervisory work among distributors. But such work is obviously desirable and conducive to greater efficiency. It is charged either directly to the wholesale contractor or to the power

program. Moreover, for the TVA and its wholesale contractors, the ratio of combined sales promotion expense to aggregate gross total revenue has not been out of line with expenditures of private utilities for the same purpose. The Authority has carried practically the entire burden of promotion alone.

Until its reorganization in 1935, the Electric Home and Farm Authority — also directed by the TVA directors — was engaged in promotional work, especially in the Mississippi area served by the Tennessee Valley Authority. Its work was charged neither to the power program nor to the distributors which it benefited. Its basic function was to finance purchases by consumers on favorable terms of appliances which it approved as satisfactory in price and construction. The Authority also promoted the sale of appliances. The success of its credit plan, in spite of adverse predictions, has contributed notably to the growth of residential TVA electric load.

The many-sided TVA operations themselves have also contributed to the growth of demand for power within the TVA area and have reduced the direct cost of load building: the fertilizer program, the development of low-cost, efficient farm equipment, the speeches of TVA officials and directors and the publicity given to its achievements and vicissitudes. Although they have reached a public far beyond the Tennessee Valley, they have increased the demand for electricity and appliances in the TVA area itself. It would be arbitrary, if not impossible, to allocate to the power program the actual and hypothetical "costs" of these promotional activities, but they cannot be ignored in evaluating the "yardstick" principle.

The Question of "Yardsticks"

The national significance of the TVA experiment in relation to the regulation of power rates by state commissions has been dramatized by the invidious term "yardstick."

Although, in its early years, the TVA wholesale rate was featured as a yardstick by the TVA and its supporters, that claim has now been abandoned. Conditions of generation differ so widely between a multiple-purpose project and a private plant that equality, or even comparability, of costs cannot be expected. The cost of generation by the

TVA, no matter what method of allocation is used, cannot be a measure of reasonable costs for any other plant, whether steam or hydro-electric.

Nor has the retail yardstick any more scientific validity. If the wholesaler does not operate on a strictly commercial basis, development costs cannot be readily allocated to the retail distributor. Furthermore, the over-all wholesale-retail costs are no more comparable to those of other utilities than is the wholesale rate itself. In so far as costs have been shifted or absorbed in expenditures for other purposes, the ability of TVA distributors to show a profit is no proof that their resale rates are reasonable.

Nevertheless, the experience of TVA distributors is profoundly significant for public utility rates — both in theory and practice. The distributors' success, it is claimed, is a challenge to private enterprise calculated to stimulate private management far more than state commissions have been able to do. Widespread price reductions for domestic service since the establishment of the TVA, particularly among companies operating in the same and contiguous territory, indicate how effective that stimulus has been. It has also been claimed by its supporters that the TVA has demonstrated the feasibility of setting rates, not by reference to detailed allocations of costs, but on the basis of average costs which would prevail at reasonably full use of current.

Chapter 11

MEETING THE NATION'S NEEDS

OUR NATIONAL POWER "SYSTEM" is not properly a system at all. Its organization is partly private and partly public. It is made up of private utility operating companies, variously held together through stock ownership and contractual arrangements, of public agencies generating, transmitting and distributing electricity and of federal and state authorities acting in a supervisory and regulatory capacity. Government therefore participates in decisions which in unregulated industries are made by management, and its relation to the power industry is fundamental in building an effective national power system.

The role of government in the construction and operation of electric power facilities was greatly expanded when it embarked on a public works program to combat the depression of the thirties. Between 1933 and 1939 the Public Works Administration allotted \$458 million for the development of power projects — \$253 million to federal projects conducted by the Bureau of Reclamation, the Corps of Engineers of the United States Army and the TVA, and \$205 million as loans and grants to nonfederal works. In addition, by the middle of 1941 the Rural Electrification Administration had allocated more than \$383 million to rural projects. By June 1940 the TVA investment had climbed to \$313 million and the estimated cost of the dams alone is expected ultimately to reach \$596.6 million. Although the amount of public funds invested in electric systems cannot be accurately calculated, apparently over a billion dollars had been invested in electric light and power facilities by or with the aid of the federal government up to March 1939.

Meanwhile expenditures of private utilities on plant and equipment began to fall off. Amounts ranging from \$700 million to \$850 million per year had been expended from 1924 to 1930. But from 1932 to

1936 expenditures ranged from \$120 million to \$270 million annually. Before 1931 security issues for new capital exceeded expenditures on electrical plant and equipment in some years but between 1932 and 1938 construction costs exceeded capital issues. Holding companies were halting expansion and a large part of actual construction was being financed out of depreciation reserves. Similarly, expenditures for replacements and additions to plant dropped about one third in the 1933-1938 period as compared with 1924-1930, averaging \$255 million per annum in contrast with \$777 million in the earlier period.

If investment by or with the aid of the federal government during the six years 1933 to 1939 was over a billion dollars (\$1,024 million), or about \$170 million per annum, total expenditures on plant and equipment, both public and private, averaged around \$425 million, or about 55 per cent of average annual expenditures by the industry from 1924 to 1930. Thus government expenditures were considerably less than those necessary to maintain the demand for plant and equipment at the 1924 to 1930 average level, and even further below the 1928 and 1929 levels.

Statistics on the rate of increase in the total value of plant and equipment in the industry confirm the view that electric systems, both public and private, have expanded less since 1933 than between 1922 and 1932. The investment of about one billion dollars in electric power by or with the aid of the federal government represents a 9 per cent addition in six years to the total value of private investment in the industry in 1932. But between 1922 and 1927 the depreciated value of the plant and equipment of private companies increased by \$4.3 billion, or 36.4 per cent.

The failure of private utilities to expand as rapidly after 1933 as they did from 1921 to 1930 is not necessarily to be criticized, nor is the failure of the government to maintain the previous rate of expansion of the national power system an indication that public works were inadequate. Even without a depression, the industry might have been unable to maintain the rate of expansion set in 1922-1932.

The best test of the public works policy is the extent to which (1) increased electrical capacity has resulted from government spending and (2) additions to capacity in excess of immediate needs may be justi-

fied on the basis of demands in the near future. The basic object of the federal power program is, of course, to smooth out economic expansion.

The average annual increase in capacity between 1933 and 1939 was 679,000 kilowatts, or about one third of the 1922-1932 figure of 2.0 million kilowatts. Between December 31, 1934 and December 31, 1939 the installed capacity of private plants increased about 6.4 per cent, that of public plants, 92.7 per cent, or of all plants, 12.6 per cent.

Effect of Public Competition on Private Investment

Competition between public and private utilities is difficult to measure. In the main, the rural electrification program has not displaced private investment, and there is no evidence that federal hydroelectric facilities have brought serious financial losses to private utilities. While federal projects have stimulated public acquisition of transmission and distribution systems, and private interests have contended that pressure was employed to depress the prices of their properties, there is little evidence of confiscation of bona fide investments.

The PWA policies of financing new state and municipal electric systems or additions to old systems are, however, more vulnerable to attack by the private utilities. Although the PWA financed some duplicating municipal systems, they probably represent less than 0.3 per cent of the total value of plant and equipment of private systems as reported in 1932. The competition of municipal and state systems nevertheless tended to press down the rates of private systems. Also, the PWA not only loaned funds but also made outright grants, amounting generally to 45 per cent of the cost of new construction. Of its total allotments of \$66.4 million to 319 municipal systems, \$29 million were outright grants.

The yardstick effect of public works programs has been criticized even more than their direct competitive influence, since the cheap electricity sold by federal projects, rural cooperatives and municipal systems may, through comparisons, depress the rates of noncompeting private systems. The national average of residential bills declined between 1931 and 1935 and this trend was accelerated between 1935 and 1937. Yet there are many possible reasons for these reductions other than the influence of public power projects, as for example: (1) the

revival of business increased regulation activity by state commissions; (2) the publication of typical bills by the FPC encouraged local comparisons; (3) voluntary rate reductions were made by many companies in response to public sentiment; and (4) lower costs of electrical appliances enabled companies successfully to introduce promotional rates.

Public policy has been founded on the premise that cheaper electricity would increase its use without damaging investors. The lack of comprehensive annual statistics on profits prevents any conclusion that electric utilities have suffered no decline in profits; yet there is little evidence of such a decline. The private utilities in the vicinity of the TVA, for example, apparently did not suffer any loss of earnings, although their ability to reduce their costs by refinancing was impaired.

The public works program has also been charged with displacing or deterring future investment in private utilities in some areas. Future private investment would depend upon the growth of load, which depends in part upon the speed and extent of rate reductions. Yet, regardless of such growth, no private company would have been apt to build huge power plants like those in the Tennessee and Columbia river valleys. It must be admitted that some government investment in electric utilities has reduced the need for private investments that would otherwise have been made.

The most serious criticism of public works policies — and the one most difficult to appraise — is that they hinder automatic business recovery and tend to become self-perpetuating. It is said that public works have discouraged private investment in electric companies because the prospects of profit have been impaired. But it is difficult to prove that earnings prospects in electric utilities have been reduced. In 1937 and 1938, when private companies found that the margin between peak load and capacity was narrowing, they invested in plant extensions despite the uncertainty of future profits. Expenditures in plant and equipment rose from a depression low of \$120 million in 1933 to \$424 million in 1937 and \$403 million in 1938.

The ultimate question is whether investors anticipate that pressure from public plants will reduce the profits of private utilities below the rate of return they require before making investments. As yet no con-

vincing evidence is available to prove that public works projects have induced investors to steer clear of electric utilities.

Electric Power, National Defense and War

During the first World War the supply of electric power was not great enough for the prompt production of materials of war. "Only the sudden end of the war prevented a serious shortage of power supply with which to meet the increased demands for the equipment of an army of 5,000,000 men," according to an army officer writing with authority from the War Department. Generating capacity was nearly exhausted by 1917 and a coal shortage during the severe winter of 1917-1918 further complicated the problem. Shortages of power appeared in most industrial areas.

These shortages were first met "by direct aid in the form of power machinery installed in connection with contracts for particular products required by the Army, the Navy, or the Emergency Fleet Corporation, the cost of this machinery being absorbed to a greater or lesser extent in the cost of production." In certain localities, where power capacity was inadequate to fulfill Army contracts, the Secretary of War forbade that further orders be placed except with the approval of the War Industries Board. Lack of flexible and capacious interconnections between adjacent power systems virtually prevented the utilities from taking advantage of the diverse loads of different systems. Moreover, no broad comprehensive plans had been drawn showing how all existing power resources, steam as well as hydraulic, should be interconnected, developed and coordinated so as to serve not only the immediate war needs, but also to supply the general public in peacetime with the greatest efficiency and economy.

The failure to effect any considerable increase in the power supply of the nation made it necessary for the War Industries Board to ration power after October 1, 1918. Power administrators were appointed in two of the most critical areas and the entire output of power of two great companies was requisitioned by the President of the United States.

The report from which the foregoing statements are taken — a volume by Colonel Charles Keller, *The Power Situation During the War*,

published by authority of the Secretary of War in 1921 — concludes that "the country was still, practically a year and a half after the declaration of war, unable to proceed to the execution of a comprehensive program for taking care of our ascertained power needs of the near future."

In view of the poor power planning during the first World War, the question is raised how adequate are our power systems for the present war emergency?

At the outbreak of war in Europe, President Roosevelt appointed a National Defense Power Committee consisting of the Assistant Secretary of War as chairman and a number of leaders in the industry. In October 1939 the President transferred the work of this committee to the National Power Policy Committee, which was reconstituted under the chairmanship of the Secretary of the Interior and instructed to "devote itself to the development of a national power policy in the interest of national defense as well as peace time needs." As the war progressed, a Coordinator of Defense Power was created in the Office of Production Management with a staff composed of both private and government power representatives. The Federal Power Commission's study of the adequacy and availability of power was coordinated with that of the OPM — now the War Production Board — making it possible to plan for the future development and utilization of power reserves in accord with the priority rationing of scarce materials.

The National Power Policy Committee and the National Defense Power Committee agreed that the electric facilities of this country were inadequate for war production, especially in the northeastern states. The President instructed the Federal Power Commission on June 14, 1940 to take immediate steps to insure adequate electric power for the defense program and to protect the nation's power resources against sabotage. On December 6, 1940 the Commission submitted the first of a series of monthly reports showing the location of prospective surpluses and shortages of power.

In studying the situation, the FPC became convinced that the United States would face a serious power shortage with the expansion of defense activities. On July 16, 1941 the Commission submitted to the President a plan to provide adequate power for production in 1943, 1944, 1945 and 1946 if armament expenditures reached \$3 billion per

month. This would mean a load of approximately 20 million kilowatts, of which 11 million was assumed to represent displacement of normal load. For the years 1943 through 1946 approximately 2.5 million kilowatts of new steam and one million kilowatts of new hydro-generating capacity would be required, assuming a 30 per cent displacement of normal loads.

It is still uncertain whether the ambitious construction program recommended by the Commission to meet these anticipated needs will have to be carried out. But apart from the question of total capacity, the demands of war require a somewhat different national industrial plan from those of peace. Generating stations should be located with a view to the manufacturing needs and the exposure of the country to enemy attack. The concentration of generating capacity in the past twenty years in large stations has made city services, as well as many factories and mills, dependent upon relatively few stations and power lines. Destruction of these stations or lines in time of war would disastrously dislocate urban life and hamper our defense and military production.

Finally, a national electric system may be so designed as to minimize its demands upon the transportation system and its competition for fuel and man power in time of war. Hydro plants, for example, do not depend upon supplies of coal. Their operation requires little man power and, in a sense, they represent a reservoir of "human labor" largely stored up at the time of construction during peacetimes. But private industry as now constituted cannot be expected to take account of these considerations.

If our national power facilities were being planned afresh today, we should lay out market territories so that each community would be served from the plant with the lowest delivered cost of power, including generation and transmission costs. But the savings in combined operation of hydro and steam plants, as well as the fluctuation of loads in different areas, would make the boundaries of "economical territories" indefinite. Furthermore, it is economical to shift loads at different hours of the day and different seasons. Rapid shifts are also necessary when generating or transmitting facilities fail.

With this ideal system in mind it may be worth while to explore three possible ways of securing the most economical use of existing gen-

erating plants: (1) the unified operation of groups of plants, (2) the creation of an independent transmission system and (3) intersystem sales of power.

Coordination of Generating Facilities

A group of plants operated as an integrated unit is the most direct method of creating a coordinated system and the one most favored by private utilities. This form of organization simplifies engineering problems, including the distribution of normal and emergency loads between plants, and eliminates the cost and delay of securing interconnection agreements between companies with divergent interests. It reduces the tax burden of the constituent companies in many cases and increases the bargaining power of the system in dealing with outside companies. How far private systems make the most effective use of their generating plants by operating them as a single system is difficult to determine, although some reduction in generating costs as well as improvement in service has resulted from this type of operation.

Public systems are developing in the same direction as private systems. The Tennessee Valley Authority operates its plants as an integrated unit, partly because water releases to control floods must be planned for the entire system. Also, water releases at upstream plants affect the power capacity at downstream stations. Suggestions have been made that the Bonneville, Grand Coulee, Shasta and Boulder Canyon projects should also come under a single authority and that the TVA be interconnected with the facilities of the Grand River Dam Authority of Oklahoma and a proposed Norfolk Dam Authority in Arkansas. The development of regional public systems in the United States may have been influenced by the Ontario Hydro Electric Power Commission, which now supplies practically all the power in the Canadian province of Ontario.

Transmission systems, operated independently of generating and distribution facilities, are worth considering as an efficient means of coordinating the generating plants of large areas. A transmission system might charge tolls for the use of its lines, like a pipeline or a railroad, or it might buy power where it is cheapest and sell it where it can get the best price. While no independent transmission system is now

operating in the United States, other countries have experimented with them, notably France, Canada, with the Ontario Hydro Electric Commission, and Great Britain, with the British "grid" system.

The British grid has achieved notable economies by adjusting generating capacity investment more closely to demand and by reducing reserve generating capacity and operating costs. British experience provides little basis for estimating the savings which might come from a similar grid in this country, however, because private utilities in the United States are interconnected much more than they were in England before the grid was constructed, and American private systems have already replaced many small inefficient plants with larger stations. The British Central Electricity Board, the government agency which operates the grid, purchases power from generating plants at prices that cover all costs plus a return on investment. The power is resold to public, private and semipublic distributing agencies under schedules that are uniform for each of nine regions covering England, Wales and southern Scotland.

Unified operation of groups of plants, with the aid of either affiliated or independent transmission facilities, usually fails to tap all the potential economies in a planned and coordinated regional power system. Wide areas of sparse population are the only economic boundaries for power systems. If a system stops short of these boundaries, interconnection with neighboring utilities would bring further savings through intrasystem sales of power. Information concerning intersystem sales is very inadequate. Of all power produced in 1937, 17.7 per cent was sold by the producing "establishments" for resale. The Census Bureau defines an "establishment" in such a way, however, that the buyer may be a unit belonging to the selling system.

Interconnection Agreements

The most frequent type of interconnection agreement is made between two parties merely to supply power for emergency needs, or to interchange separate blocks of surplus power when it appears likely to become available. Where transmission is expected to be fairly continuous, large in amount, predominantly in one direction and indispensable to the purchaser, the arrangement usually takes the form of a contract

for firm power running for a fairly long term of years.

Interconnections involving three or more parties are less frequent. In some instances systems may be joined in a network. More often, in a three- or four-system group, interconnection between some of the component systems is effected only through the system of another member — the so-called chain interconnection; and in extreme cases, the major interchange transactions are between the end systems, with the intermediates serving as transmission links.

If there are many parties in interconnecting systems, settlements become complicated and cooperation may be impaired. They are particularly difficult in chain interconnections, since the intermediate party contributes its facilities for transactions between the end parties in which it does not benefit directly. Multiple interconnections have the most problems, which become still further complicated in dealing with intermediate companies in chain interconnections.

Because of the difficulties in effecting interconnection agreements between several parties, power pools or exchanges have been developed. The power pool is a quasi-independent agency for whose benefit investments are made and to whose account total economies achieved by interconnected operation are credited. Some pooling agreements provide that parties with less than average reserve shall pay a capital charge on their deficiency to those with more than the average. After applying the aggregate savings to the carrying costs and upkeep of the interconnection facilities, any remaining net benefits are distributed among the parties concerned.

Interconnection between systems is not synonymous with coordination of a power supply. Coordination means that the aggregate power resources in a given region are utilized to supply the aggregate load, which implies some type of common load dispatching based upon overall economy and reliability of service.

The available data concerning interchange contracts do not justify a conclusion on whether they result in the economies of a well-planned regional system. Their effect depends on whether common interests control the operating companies and also upon the area covered by the interconnected system. Here, too, comprehensive and accurate information is lacking. Although physical interconnections exist over wide

areas, they have little capacity at some points or are not used effectively to integrate the whole area.

Interchange between public and private electric systems presents special problems. Either private utilities are loath to enter into agreements with public power projects which result in control of their rates and profits, or such contracts arouse suspicion that private interests may be obtaining the benefits of public investment.

State and Federal Policy on Interconnections

No policy as to interchange of public power has yet been developed, and regulatory bodies, largely because of lack of authority, have done little to promote efficiently integrated power systems. Interconnection complicates state regulation of rates because the wholesale price for power must be appraised. Among the state commissions, only the Public Service Commission of Wisconsin appears to have studied the advantage of state-wide-system planning and to have facilitated interconnection agreements.

The Federal Power Commission has greater authority and opportunity than state commissions to integrate generating plants through its power to develop river basins as a whole. It is also empowered to divide the country into regions and promote interconnection within each region. Upon its own initiative the FPC may order temporary connections in an emergency. While the Commission has for years been studying the adequacy of generating facilities in various parts of the United States, it has never divided the country into regions for the voluntary coordination of facilities. It has, however, declared power emergencies in the southeastern section of the country and in northern Virginia and has ordered increased deliveries of energy over established interconnections as well as the construction of new ones.

Because of the limitations of the interchange contract and the need to fully utilize federal power, the main transmission lines might be operated by the federal government. Regional grids could pool our generating facilities, public and private, and like the British grid, could make wholesale power available over wide areas to all distributors at a uniform price. A nation-wide grid is scarcely feasible in this country, although a series of regional grids to interchange power might be pos-

sible. Principles could be agreed upon by public and private interests if negotiations were undertaken in a cooperative spirit. Unfortunately, the economies obtainable by a system of grids cannot be measured because information is lacking on the efficiency of present American plants under unified operation and interchange agreements. Both private companies and the Federal Power Commission believe, however, that better interconnections would bring considerable savings.

Coordination of Generation, Transmission and Distribution

The predominant pattern of privately-operated electrical utilities in the United States is a system engaged in generating, transmitting and distributing power. In this type of organization, the generating agency controls the rates to consumers and therefore can experiment with promotional rates. But in spite of these opportunities, vertically integrated companies, with some notable exceptions, have not been willing to experiment with blanket rates on a promotional level. Large companies have usually been built up by the consolidation — sometimes accidental — of smaller units operating in unplanned territories. The maximum economies in generation and transmission have not yet been realized.

Wholesale contracts, like interchange contracts, are made in markets where there is limited competition, often but one seller and one buyer. Thus a generating agency offering reduced wholesale rates can rarely be sure that its customers will lower their retail rates and so expand consumption and create a more economical load. Some private systems have urged their wholesale customers, both municipal and private, to reduce prices to build up their loads, but this policy has been exceptional. The greatest reductions in generating costs, as we have seen, are achieved when all distributors reduce rates and thus increase the aggregate load. But where the seller is also a distributor, he may be disinclined to set low wholesale prices, because the low resale rates, especially those of municipal plants and rural cooperatives, may be used as "yardsticks" and press down the retail prices of the vertically integrated system in its own distribution territory.

Federal projects, especially the TVA and Bonneville, have so regulated the resale rates of their customers as to pass on to consumers

economies of generation, eliminate monopoly profits in distribution, reduce distribution costs and bring about experimentation with promotional rates. This policy is due to the need of developing markets as quickly as possible for growing capacity as well as to the belief that lower rates are economically justified. (See Chapter 9, pages 141–143; Chapter 10, page 179.)

The shortcomings of private wholesale contracts might be overcome by regulating both wholesale and retail rates. Many state bodies are authorized to regulate the wholesale price of power sold in intrastate commerce but few have attempted seriously to do so. The Federal Power Commission has only recently begun to regulate the rates of its licensees and its authority to regulate the interstate wholesale rates of nonlicensees has yet been little used. In practice, control of resale prices by federal generating agencies avoids the legal and administrative tangles which have helped to paralyze rate regulation by state commissions. Moreover, federal control of resale prices is in the hands of a body with a direct interest in low distribution margins.

Summary

Economical distribution requires the planning of market areas, since duplicate lines are obviously wasteful. Some distribution areas skim the cream of the market. Municipal systems are often confined by law or choice to their city limits, and rural cooperatives are restricted to previously unoccupied territory, often uneconomical in shape and size. Private systems may discourage suburban or rural consumption by charging lower rates in cities than outside.

If distribution territories, in the main, were centered in areas of dense population, including only the surrounding territory that could not be more economically served by the next load center, they could advantageously take care of the diverse urban and nonurban loads. Uniform rates throughout a given territory — or a group of such well-balanced territories — would reinforce this tendency. Rates might then be higher than they are now in populous areas but even that is doubtful. In any event, the cost of supplying power to the whole region would be reduced.

Economical distribution of electricity through local agencies also re-

quires access to the economies of large-scale financing and construction, technical research and similar services. The holding company systems of the 1920's often sought to supply these services on a large scale through the central company or an affiliated service company. In many cases the fees charged the operating companies were exorbitant, and the service company was used by the dominating holding company interests as a device to milk the operating companies. The Securities and Exchange Commission, which is now empowered to require affiliated service companies to operate at cost, may eliminate a large part of this evil.

If the SEC, acting under the "integration" clause of the Holding Company Act, separates many operating companies from their holding companies, the problem of access by the new companies to cheap technical and managerial services will become important. It is already a problem for municipal systems which rely mainly upon intermittent consultation with private firms.

Coordination of Government Policy

The present overlapping jurisdictions of regulatory powers and conflicts of public policy are due partly to the fact that government in the United States is founded upon the dual sovereignty of the states and the federal government, and partly to the magnitude of the regulatory task. The problem of coordinating our power system is to harmonize the policies of authorities (1) with different territorial jurisdictions and (2) with control over different aspects of the electric power industry.

Although state governments have made little progress in dealing mutually with interstate matters, they are critical of the federal government's efforts to regulate public utilities. Harry Bacharach, President of the National Association of Railroad and Utility Commissioners, has said, "I have seen . . . the effective powers of state commissions year by year narrowed, restricted, eroded and displaced by acts of Congress, and through administration and interpretation of these acts by the federal regulatory commission set up by them, . . . approaching the vanishing point." But Mr. Bacharach has admitted that "especially from 1920 to 1929, problems of regulation developed in extent and intricacy

more rapidly than the process of state regulation. . . . It would be worse than foolhardy not to recognize that under our Constitution state regulation to be wholly effective must be complemented by Federal regulation; and that there is a 'gap' between the limits of effective state regulation and completely effective regulation that can only be covered by federal legislation." Obviously the regulation of interstate wholesale rates by the Federal Power Commission and of intrastate rates by state commissions can succeed only if the two cooperate.

Jurisdiction over water resources has recently caused considerable friction between state and federal authorities. In the New River case forty-one states disputed the FPC's claim to jurisdiction, but the Commission was substantially upheld by the Supreme Court. (See also Chapter 2, page 28.) The reasons for state opposition to federal authority are not always clear but the basic question seems to be whether water power should be regulated at all. Congress has reserved to the states the right to intervene in proceedings before the FPC prior to the granting of a license; it requires licensees to comply with state laws before obtaining a license; it has authorized states to regulate the operations of licensees to the full extent of their constitutional powers; and it has avoided trespassing on the rights of states in regulating the financial policies of electric utilities.

Conflict may also result from the division of jurisdiction over rates and securities between the two federal bodies, the FPC and the SEC. Effective regulation requires that both powers — of controlling rates and security issues — be lodged in the same body.

Plans for proper interconnections involve federal-state cooperation. The Federal Power Commission has been surveying interconnections and can order these in emergencies or when requested by a utility or state commission; but no state commission has yet sought its aid.

A survey of the relations between federal and state authorities does not reveal Congressional disrespect for the states or serious federal interference with them. Many states have made little serious effort to regulate the power industry, but their failure cannot be attributed to federal usurpation of authority. State commissions frequently do not exercise the authority they have, nor utilize existing opportunities for cooperation with the federal government.

Regional Regulation

Proposals for some form of regional regulation originate in the fear of a "federal octopus" on the one hand, and doubt of the effectiveness of state regulation on the other. Federal regulation, it is said, devitalizes state government and creates excessive concentration of economic power. This means centralization of administration in Washington, with the result that differences in local conditions are ignored and administration becomes rigid, inefficient and costly.

Highly centralized regulation may be dangerous but decentralized authority may cripple public control of the utility industry. The Attorney General's Committee on Administrative Procedure concluded in 1941:

Important factors may militate against complete decentralization. One is the need for uniformity, more important in some agencies than in others; a second is the novelty of an agency's work; a third may be a limited staff. But the Committee is convinced that the convenience of the public may be served and administration improved if those agencies which are in a position to do so will vest in field officers greater powers to deal with the persons whom they regulate.

While the obstacles to regional regulation of the electric power industry are great, the possibilities of decentralization seem to be well worth further exploration by federal agencies. To assure uniform action where necessary, joint meetings or a central body could make decisions affecting more than one region. Regionalization of federal rate regulation would have only a limited effect. It could not remove the irrelevant and vague line between federal and state jurisdiction, nor stimulate more effective state regulation. It might, however, encourage closer cooperation between federal and state governments.

An extension of regional compacts has been urged as a means of achieving nonfederal regional regulation. Some seventy such interstate compacts now exist. Most of them deal with specific problems such as the distribution of water rights between states in a river basin, river pollution, flood control, boundary settlements, the construction and administration of bridges and port facilities and the passage of uniform legislation. Yet none provides for the development of broad policies or

the continuing adjustment of policies to changing economic conditions.

Specific experience is therefore lacking for an appraisal of the usefulness of regional compacts for the regulation of electric utilities. The Federal Power Commission considered such regulatory compacts some time ago but decided that "we would, in effect, have merely created . . . another Federal Government to serve in place of the one we now have." Essentially, the vested interests of administrators and politicians and divergent state attitudes toward regulation stand in the way of regional compacts. Jurisdictional problems between federal and state authorities would not be settled by purely interstate compacts. But regional compacts pooling state and federal powers over electric utilities would eliminate conflicts in the present division of jurisdiction, even though it would still be necessary to coordinate the policies of different regional bodies.

The Scope of Regulatory Agencies

States are small enough to concentrate most regulatory functions in a single agency. Coordination of policy is thereby facilitated. The federal area, on the other hand, is so wide that specialized agencies have been developed and coordination of their policies is less easy. For instance, both the SEC and the FPC have jurisdiction over mergers and the acquisition of securities and utility assets. Conflicts in regulation often occur since the same companies may be subject to the jurisdiction of both agencies. Also, the problem of reducing the size of holding companies until each controls only one or a few integrated systems can best be solved by the coordinated efforts of the SEC and the FPC.

Coordination of federal policy is also necessary in the development of the water resources of multiple-purpose projects. Both the War Department (chiefly responsible for flood control and navigation) and the Bureau of Reclamation (which promotes irrigation) have turned gradually to the development of electric power on their projects. In recent years most projects have apparently been designed to perform as many functions as possible, but there is some doubt whether flood control projects are being economically planned.

The problem of coordinating federal power policies also raises the question of the administration of the various federal power projects.

Some argue that they should all be placed under one agency, such as the Interior Department; others favor regional organizations, each with largely autonomous control. Since one of the major purposes of the Holding Company Act of 1935 is to destroy absentee landlordism by returning utilities to local management, an absentee management in Washington of a huge and scattered federal power industry would be at least inconsistent. Decentralization of administration would have advantages similar to those inherent in the decentralized regulation of private utilities.

The major difficulty in regulating rates effectively is to determine the rate base and rate return. If regulation is not to create a "cost plus" system, utility commissions must scrutinize the prudence and honesty of the expenditures to be covered by the rates. Private utilities then complain that the commissioners are substituting their business judgment for private management's.

Similar problems occur in regulating the financial structures of utility companies. Effective regulation requires that total issues of securities and the ratio of fixed-interest securities to all securities be considered. Furthermore, various devices for impairing capital or diverting the income of a corporation provide loopholes for escaping regulation.

It is clear that state regulation has not seriously impeded the development of the power industry, although it may have failed adequately to protect consumers and investors. There is considerable truth in the saying that "regulation has not failed because it has not been tried," even though it overlooks notable efforts by a few state commissions. Although federal regulation of electric rates has hardly begun, regulation of the financial structures of power companies has made rapid strides towards the elimination of the most questionable practices of the industry.

Administrative Agencies and the Courts

An important group in the American Bar Association has argued for broader and more effective restraints by the courts upon administrative bodies. After years of study, a Special Committee on Administrative Law of the American Bar Association issued a report in 1938 pointing out many tendencies in administrative processes against which judicial

safeguards were needed. The committee's suggestions were embodied in the Walter-Logan Bill, passed by both Houses of Congress in the fall of 1940, but vetoed by President Roosevelt on December 18 of that year.

According to its supporters, the Walter-Logan Bill was an attempt to prevent the development in the United States of the tyranny which arises when agencies charged with the administration of particular statutes have uncontrolled discretion in interpreting the law and in finding the facts. The Bill provided for regulation of the regulators by requiring them to interpret, in the form of rules or regulations, the statutes under which they operate.

Opposition to the Bill was based largely on three grounds: (1) the impracticability of prescribing uniform procedure in rule making for agencies which administer a wide variety of statutes and regulate industries operating under varying conditions, (2) the needless delay and expense that would be incurred and (3) the unjustifiable extension of the scope of judicial review of commission regulation.

In his veto message, President Roosevelt recounted the conditions which gave rise to administrative agencies, and the need for "a common sense resort to usual and practical sources of information" in the place of "archaic and technical application of rules of evidence." He stated that American jurisprudence must advance along two lines: (1) cheapening, expediting and simplifying the judicial process itself and (2) reserving the judicial process for cases appropriate to its exercise and protecting the courts from being overwhelmed with masses of controversies growing out of regulatory and remedial statutes.

In February 1939 the Attorney General appointed a Committee on Administrative Procedure which, after extended investigation, issued a majority report, a minority report and a separate statement by one of its members. All three reports recognized that present procedure in the issuance of rules and regulations could be, and should be, improved so that: (1) possible disputes and controversies may be prevented or may be disposed of wholesale instead of by the case-to-case method, (2) interested private individuals may have greater participation in rule making and (3) individuals may be informed in advance of the administrative agency's interpretations of the statutes it is administering. But

the reports differed substantially on how to achieve these objectives.

Both investigating groups, the American Bar Association and the Attorney General's committee, seem to be in substantial agreement on the need for reasonable restraints upon the rule-making functions of administrative agencies, and the possibility of agreement on methods of achieving these reforms. To reject any plan of judicial review of the acts of commissions would be to accept the doctrine of administrative infallibility and impartiality — one not in accord with the history of commission regulation in the United States. Perhaps the most practical procedure would be for Congress, or the state legislature, as the case may be, to inquire into the situation of particular agencies and to deal with each in specific laws.

Most students of the administrative process recognize that it is undesirable to mix the function of investigation or advocacy with the function of decision. Various proposals have been made for their separation. Some of these are to create: (1) a hearing commissioner in the administrative agency with powers of initial findings of fact and decision but subject to ultimate decisions by the agency as a whole; (2) a wholly independent board with unrestricted power to review the decisions of all federal agencies; (3) a hearings commissioner for the agency, appointed by a separately constituted office of administrative procedure and answerable to it alone. If there is a complete separation of the functions of prosecutor and judge in administrative procedure, findings of fact by the administrative officer or tribunal, if supported by substantial evidence, might be made conclusive in any judicial review, except where a constitutional right or privilege is at issue.

Public versus Private Operation

In comparing the efficiency of public with private systems, allowance must be made for the contributions of each to the public service through taxation or otherwise. Also, since private utilities, motivated by the desire for profit, obviously cannot be allowed to operate without restraints, some of the cost of private as compared with public service is the expense of regulation. And since public enterprises can borrow money more cheaply than private businesses, private utility operation must effect offsetting advantages or remain more costly.

Rural cooperatives are only now beginning to emerge from their developmental stage and it is not yet clear whether they can cover their costs. If they can, they offer a cheaper form of electric service than private systems can afford to give.

The multiple-purpose projects of the federal government fall into a different category. Irrigation, navigation, flood control and other services, unsuited or unattractive to private enterprise, are combined in federal projects. Many such projects are undeniably economical. The advantages of adding power facilities to projects for navigation and flood control often greatly exceed the cost. The net cost to the government of public power projects may be low because they use resources which would otherwise be idle in time of depression. Nevertheless, there are, as in all public projects, difficulties in calculating costs and dangers in rate comparisons which fail to take account of advantages enjoyed by public projects but inaccessible to private enterprise.

Dissatisfaction with regulation in the past has stimulated demands for public ownership of utilities, yet the necessity for regulation does not disappear with public operation. Some municipal systems are operated to obtain monopoly profits for tax relief, for instance, which may obstruct the widespread use of electric service and so keep costs high. Furthermore, public operation of electric systems does not necessarily mean the exclusion of private utilities. The latter have made great technical contributions to the industry. Their organization in some respects is more flexible than that of public systems. But the downward pressure of the private profit motive on costs has undoubtedly been overrated, just as the capacity of public servants for initiative and enterprise has often been underrated.

The power facilities of the United States at present make up a national power system which is partly public and partly private. Each may act as a healthy check upon, but should not be allowed to hinder, the other. But if our national power system is to remain partly public and partly private, the two segments must be coordinated. Much more effective arrangements for interchanging power between public and private agencies must be developed if the best use is to be made of the power resources of large areas. This is part of the larger problem of regional coordination which may well become a public issue and

eventually call for some form of public integration for the whole country.

Whether private enterprise will be undermined by the extension of public operation cannot be decided solely as a matter of political philosophy. If private utilities cannot satisfy the needs of the public, the problem cannot be solved merely by opposing public operation.

Governmental authorities cannot always take the prices people can pay for power as a measure of its benefits. Also many projects yield indirect benefits that are not measurable. Even if the electric rates of the large regional federal projects fail to cover costs, their indirect effects might justify the element of subsidy. The books of a particular project may show a loss on power operations but the stimulation of economic life may be a good investment. Similarly, the rural electrification program may be justifiable even if, ultimately, it shows financial losses. Public power operations are defensible if they yield net benefits after *all* their economic consequences are taken into account.

But some claim that outright subsidies to individuals or corporations are more desirable. Most federal power developments, however, have been multiple-purpose projects which have helped to raise the level of economic life in the region. Cash subsidies to individuals would not have obtained these benefits. Moreover, the government can direct its expenditures to services which are most likely to profit the region as a whole. Subsidized service might also tend to discourage private enterprise. This can be avoided only if a genuine effort is made to preserve the integrity of those private enterprises which perform the same or similar services as public enterprises.

The net effect of the public power program on the private utilities is impossible to determine. They have both gained and lost. It is often forgotten that they have gained in so far as the wages paid to men engaged on public works and in the industries aided by them have been reflected in consumer expenditures for electricity. Also, public works use materials produced by many industries which are more or less important purchasers of electricity.

An industrial nation needs a coordinated power system both in war and in peace. Our national life depends increasingly on a reliable and economical supply of electric power and cheap electricity is produced

only in large-scale operations. Public power projects may play an increasing role in the approach towards a well-integrated national power system. Finally, the greater coordination of small units may well open up an economical path towards an efficient national power system based upon localized control.

THE PROGRAM

Chapter 12

REPORT AND RECOMMENDATIONS OF THE POWER COMMITTEE

THE BUSINESS OF SUPPLYING ELECTRIC ENERGY to the homes, farms and factories of the United States is one of the very first importance to the people of this country. Every citizen in his home, every investor in his office, every industrial manager in his plant is aware of the major and increasing part which the production and distribution of electricity plays in our economy. Few voters can have failed to have had brought sharply to their attention the fact that the power of government, federal, state and local, affects the conduct of this great business in many and complicated ways.

Probably, however, only those immediately concerned with the complexities of the problem appreciate how great those complexities are or how difficult is the satisfactory working out of the challenges which they present. It has been the task of this committee to attempt to state some of the more obvious of the questions which are raised by the present development of the relationship between government and this industry, to indicate possible methods by which the answers to these questions may be approached and to offer some suggestions as to what those answers might well be.

In appraising what is here said, it should be remembered that nearly all the more important questions arising in this field are exceedingly controversial in character. Upon these, opinions are strongly held and supported by persuasive argument. The immediate interests of those affected by the recurrent controversies are often, at least in surface appearance, sharply divergent. Expression of opposed views has often been extreme and sometimes marked by resort to bitter personalities. In some of its phases, discussion of the problems here dealt with has been

further complicated by their relation to fundamental differences in political philosophy which in normal times divide the whole country. While in principal focus the question of the utilities has turned about the control of an essentially noncompetitive industry by government as representing the consumer, the tremendous sweep of the financial operations of the industry, the resulting stake of the investor in its wise and profitable management, and the development and results of concentrated control through the holding company system have combined to bring new demands for action by the government. Since 1932, and notably in the legislation of 1935, the national government has exerted its power to an extraordinary degree, not only by increasing its control of the financial and other practices of the industry but by the development of great publicly-operated hydroelectric projects. In consequence, a new set of problems in the relationship of government to this industry have been added to those previously existing and still not satisfactorily solved.

The Committee ventured into this field with very considerable appreciation of the difficulties of its task. Its members all had had some familiarity with the problems of the industry from actual contact with them. They were chosen because they represent very different points of view. These points of view range from that of the utility executive to that of the critical opponent of certain utility practices. The members of the Committee include some who subscribe in general to the theory of what is called the "New Deal," and others who are sincere and earnest opponents of that philosophy and of much of its implementation.

This is said not by way of apology for the limited scope and somewhat cautious phraseology of the views here to be expressed, but to suggest that if a group so constituted can reach any measure of agreement even as to the definition of problems which call for solution in the immediate future, the very fact of so much agreement gives weight to the conclusions expressed.

1. THE ELECTRIC UTILITIES IN 1942

When this Committee began its work in the spring of 1939, the world, if not at peace, was not actively at war. The assumption seemed

justified that economic problems might be thought out in terms of the life to which Americans had become accustomed. While the research study was in progress the world became engulfed in armed conflict. Since this page was first written the United States has been attacked. The thought and effort of our people has become almost exclusively centered upon the exigency of the struggle for survival.

It is no longer easy to see clearly economic problems not directly related to that struggle. The projection of speculation to the coming political and economic pattern is largely baffled by the unusual difficulty and hazard by which forecast is beset. This is true even as to industrial situations which presented at the outbreak of the war a reasonably stabilized organization.

The electric power and light industry had no such stabilization. A period of far-flung expansion had been succeeded by a decade of financial dislocation and disorganization, upon which was imposed the impact of radical developments in the relation of government to the industry. Attention was focused upon the evils and possibilities of evil of the holding company system and upon measures to prevent their further operation. The government undertook far greater control of the financial structure and organization of the industry, and at the same time assumed a very important role in the actual production and distribution of electrical energy. In 1939, out of the mists of controversy, the shape of things to come was only beginning to emerge with any sharpness of outline, and the principal factors which together may determine the future relation of government to this industry were only beginning to crystallize.

The Impact of War

Then the world storm broke. The confusion which it brought to all economic effort and to all long-range constructive thinking has been perhaps peculiarly severe in this field. An industry whose very physical organization and essential financial structure were in difficult and hampering transition was confronted with new, and in some regions unprecedented, need for its highly essential product. The difficulties of adapting its existing needs for capital and for the confidence of those who could supply it, to the new and as yet largely experimental de-

mands of public policy were accentuated by the sudden and heavy increase of tax burdens and of other costs of operation, to be met out of income determined under a system which is not noteworthy for ready flexibility. The necessity of coordinating its effort into an efficient national system was made more difficult by the disturbance of these and other wartime conditions. Inclination towards forward-looking experimentation with rate policies has been checked in some degree by the uncertainties of the future and the new difficulties of the present. The clearing up of the wreckage left by certain utility managers has necessarily been slowed down, both by the intrinsic difficulties of the task and by the preoccupation of all concerned with the immediate demands of a war situation.

Indeed, the great objective of the Holding Company Act of 1935, to bring about reorganization of the industry into units of such types and sizes as "can best promote and harmonize the interests of the public, the investor and the consumer," is one in which forecast plays a dominant role. Its realization is thereby made particularly difficult at a time when forecasts of the financial future can be made only with far-reaching reservations and with understandable reluctance of the investing public to accept them.

There is reason to believe that a substantial factor in the undue depression of utility security prices as compared with comparable investment in other enterprises is the fact that so many of the utilities are under the shadow of pending or prospective reorganization proceedings under Section 11 of the Holding Company Act.¹ Later in this report some special consideration will be given to this legislation and to the activities in regard to it of the Securities and Exchange Commission. For the present they are referred to only as one more factor which in some cases adds greatly to the difficulties of the immediate situation. In addition to its direct effect, a reorganization proceeding obviously

1. I am not at all sure that utility security prices, in general, are currently subject to an "undue depression" as compared to the prices of other investment securities. Indeed, it is not clear what the Committee means by "undue" depression. The statement could be supported more plausibly if confined to holding company stock issues. A number of the senior security issues of the holding companies seem to have benefited, marketwise, by these proposed reorganizations. — JAMES C. BONBRIGHT

involves serious diversion of managerial attention at a time of great stress, accompanied by constant loss of trained personnel to the demands of the war effort. These circumstances have led many to the belief that a proposal for a sort of moratorium of these activities of the Commission until the general economic picture becomes clearer deserves thoughtful attention. To this subject the Committee will later return. For the present it is enough to say that, for all the reasons above indicated, the pattern of proper relations between government and this industry is not one which lends itself to easy and simple solution.

2. TAXATION

Before this country entered the war, taxes upon electric utilities had, as to many companies, amounted to more than 20 per cent of gross revenues. The result was to present a very difficult problem to management and to tend to weaken seriously the financial position of the corporations and to depress the market for their securities.²

This tax burden was only in part imposed by the federal government. It includes the requirements of state and local taxing units, and the sharp focus of public attention upon the action of Congress with respect to revenue legislation should not completely obscure the fact that the problem of taxation, as well as of other business entities, is in very important part a problem of local concern.

This Committee fully recognizes the urgent need for revenue imposed by the war upon the national government. It suggests no favors for the utilities nor any difference in treatment not justified by differences in their situation. It is aware that much which is said about utility taxation is equally applicable to other corporate enterprise. Any taxes imposed upon utility companies, rather than upon the individual owners of securities in these companies, disregard the principle of the graduated personal income tax. This statement, however, is not lim-

2. This statement seems to imply that, because of their heavy tax burdens even prior to our entry into the war, electrical utilities were unable, in general, to earn a reasonable net return and hence suffered an impaired "financial position." I doubt this. Certainly, no supporting evidence to this effect was brought to the attention of the Committee. — JAMES C. BONBRIGHT

ited to the utilities but applies to corporate taxation in general.

Corporate taxation as a matter of general theory is beyond the scope and perhaps beyond the competence of this Committee. It was the subject of a recent study by another Committee of the Twentieth Century Fund, and reference may be made to the Research Report and to the Report of the Committee on Taxation for a comprehensive analysis of the whole subject and for the far-reaching recommendations which accompany it. (See *Facing the Tax Problem*, Twentieth Century Fund, New York, 1937.)

Taxation of Stockholders instead of Corporations

One of the recommendations of the Taxation Committee, while of general application, has rather particular relation to the utilities. That is the recommendation that the corporate normal income tax be abolished and the corporate excess-profits tax be reconstituted upon a different and, in the opinion of the Committee, more equitable and scientific basis (*ibid.*, pp. 397-398, 483, 493-494). It was further recommended that the income now obtained from taxes upon corporate income be replaced by taxing stockholders upon the profits available for distribution, whether or not actually distributed, at rates which work out reasonably equitable treatment according to ability to pay. Whatever may be said of the practical possibilities of this recommendation during the exigencies of the war, it is supported by very compelling logic.

Turning to the particular case of the utilities, we have aggregations of capital devoted to the supply of a prime necessity. Only within increasingly narrow limits can anything else be substituted for electrical energy. It tends increasingly to occupy its field. This tendency in some part results from the efforts of its purveyors, but primarily from its widening usefulness. The provision of electric energy is so necessary that when it is not made by what is called private initiative, there arises an insistent demand that electricity be made available by government. There is constant need for expansion of production and distribution facilities, which persists through economic depression and yields only to the insistence of urgent military necessity for other use of materials and labor.

Taxation and Utility Investments

The money which is needed to finance this growth so imperatively demanded must come in the first instance from investors. If it is not thus provided, either the needed expansion will not occur and the public will suffer from its lack, or it will be provided from the only other source available — the public treasury. This is not a recourse to be lightly imposed. The result of huge expanded governmental investment in this quasi-private enterprise might easily be its forced transformation into a wholly public enterprise, under conditions highly unfavorable for so radical a change even if such a development were wholly desirable as a product of ordered and considered political evolution.

Taxation which reduces returns to investors to or near the vanishing point has, then, consequences which go beyond the immediate effect upon the investor — and upon the personal income taxes which he would otherwise pay to the government. Not only are market values sharply reduced but corporate credit suffers. Not only does it become practically impossible to raise further capital by inducing stock investment but borrowing capacity is also affected.

The public utility, moreover, cannot restore the balance by freely raising its rates, for these are regulated by public authority. In theory, regulation should permit a utility to receive from its consumers, who are its only source of revenue, its operating expenses and depreciation allowances, plus "profits" which represent the reasonable and necessary cost of capital. This is not necessarily what is customarily spoken of as a "fair return." It is something which can be determined neither by economic reasoning nor by commission fiat. It is, at any given moment, the amount of which an investor demands reasonable assurance before he will consent to risk his capital. The investor who sees that taxes will not leave for distribution by the corporation net earnings which will permit him the return which he regards as fair, simply will not risk his money. The needed capital must be found elsewhere if it is to be found at all.

Rates and Turnover in Relation to Taxation

Moreover, a system of excess profits taxation which takes substan-

tially nine tenths of *gross* profits in excess of what is assumed to be a normal historical base, simply means that rates cannot be raised, even if commissions were willing to let them be raised, so as to offset the effect of increased taxation. Since an increase of \$100,000 in rates would yield only some \$10,000 in net income, it is plain that an increase of rates sufficient to leave net earnings in equilibrium is an economic impossibility. Whatever may be the wisdom or necessity of the current excess profits taxation, its necessary result is to take from the utilities this recourse against the impact of substantially increased taxation. In these days of heavy taxation, it is open to question whether the same formula that is applied to industries which, by their practice of increasing prices to cover rising operating costs, are of a distinctly inflationary character, should in equity also be applied to an industry which, by reason of rigid prices, is anti-inflationary in its nature.

A further factor in the situation is the circumstance that the utilities are definitely in the class of slow turnover corporations. Many industrial corporations with large volume and relatively small invested capital "turn" their capital as often as once a year, whereas the utilities, because of the high ratio of fixed capital to gross earnings, turn their capital much more slowly. The result is that a given percentage of profit upon gross sales yields to them a much smaller percentage of return on capital than is the case with the "quick turnover" enterprises. The phenomenon of slow turnover is of course not confined to the utilities, but few of the other slow turnover enterprises have, in normal times, the limitation upon "profits" imposed upon the utilities by the system of regulation.

The combination of factors referred to above does not perhaps make in itself a case for special treatment of the utilities, taxwise. It does, however, strongly suggest that in view of their character, their public importance and their obvious difficulties, the utilities may deserve special study by the framers of tax legislation, state and federal, with a view to avoiding exactions which may react upon the public to a degree which will defeat the purpose of taxation. Here as elsewhere one cannot get something for nothing.³

3. The fact that electrical utilities operate, to a large extent, under conditions of decreasing costs for increasing quantities of service, adds weight to the argument that

3. THE REGULATION OF UTILITIES

The business of supplying electric energy is and will continue to be an industry of the very first national importance. It is an industry of unmeasured and perhaps unguessed horizons. Assuming the availability of sufficient power at costs — including those of the necessary appliances — low enough to permit the widest imaginable use of electricity in its adaptation to human needs and desires, those who supply such power have before them potential consumer demand which puts no easily conceivable limit upon expansion.

The interacting creation and satisfaction of this demand suggest the need of commensurate developments of every kind: technological, financial, social and political. The technological development may be put on one side as the special province of the engineers and scientists. But the working out of the financial, social and political factors calls for the highest order of statesmanship on the part of all concerned. "Statesmanship" is here used both in the broader sense of wisdom on the part of those who, in private or public capacity, deal with matters of great public moment, and in the narrower sense of wisdom on the part of those charged with the framing and execution of policies of "government," strictly so-called. For in the fields of finance, social trends and politics, "government" will inevitably have direct and, to greater or lesser degree, controlling influence upon the future of this industry.

Government Ownership Possibilities

In extreme form, this influence may be exerted by government's taking over the entire field. This is a possibility which should not be disregarded by those who do not desire its realization. The effect of the necessarily far-reaching regimentation necessary to the prosecution of the war, the likelihood of a demand at its conclusion for economic readjustments in which the government may play an increasing rather than a diminished role, the complications of shifting from a wartime

they should be given especially favorable treatment by the tax laws. The favorable treatment, however, should be made to redound to the full benefit of the ratepayers — an objective which is hardly attainable under our present ineffective methods of rate regulation. Utility tax reform must go hand in hand with reform in utility rate control. — JAMES C. BONBRIGHT

to a peacetime organization of industry — these and other factors may work in the direction of "nationalization" of this industry. Without attempting to express a considered judgment upon the longstanding controversy as to the relative efficiency of publicly- and privately-operated utilities, the research report tends at least to show that the latter have no such demonstrated margin of superiority as to be conclusive against a postwar proposal for such nationalization.⁴ Moreover, the case of electric power differs sharply from that of the railroads, as to which the recurrent suggestion of government control and operation has not as yet been widely accepted as a peacetime expedient. In the field of transportation there is important and developing competition between agencies of transportation. For electric power there is increasingly no substitute. And in the railroad field there is no such great nucleus of existing public ownership upon which to predicate a further program of public operation.

Despite these considerations and despite the general hazard of prediction, it does not seem likely that the near future will see a general abandonment of the principle of private ownership of major electric utilities. But if the principle is to survive, its continuance is predicated upon the concomitant of effective public control by regulation of the industry. The business is after all one of virtual monopoly, whose history has not been free from abuses. It is not probable that the proverbial shortness of public memory or the swing of political opinion will accept regulation which is ineffective to prevent the abuses of the past or is not adapted to the future pattern of the industry.

If, however, under a system of regulation adequate to the situation, the private utilities may be expected to continue, it is equally unlikely that there will be any serious retrogression as to the direct participation of the government in the production and distribution of electric power. Even were the results of this experimentation far less favorable than seems to be indicated, the very magnitude of what has been done makes it highly improbable that the ground so painfully and so expensively taken will in any serious degree be given up.

4. The statistical data, not only of our research staff, but also of the Federal Power Commission, seem to me to make a *prima facie* showing of superior performance by the larger publicly-owned plants. — JAMES C. BONBRIGHT

Need of Effective Regulation and Coordination

If, then, the privately-owned utilities, regrouped as may be required, are to continue side by side with the governmental projects, there must be devised: (1) a workable system of regulation of private effort which will insure its continuance by safeguarding the public interest, both investing and consuming, without improperly limiting initiative and discretion on the part of responsible management; (2) a proper coordination of private and direct governmental effort in the production and distribution of electrical energy to the end of an efficient national system.

It is much easier to formulate these objectives than to attain them, or even to indicate the steps by which they may be approached. Every aspect of the matter involves many interrelated questions which must first be answered, and suggests a host of subsidiary or coordinated inquiries, of great intrinsic interest and importance, but not directly germane to the major problem which has been stated. An example of such a coordinate inquiry is that as to the wisdom of setting up for the Columbia and Arkansas, valley "authorities" like the TVA.

Questions which are fundamental to the wise shaping of the future of this industry, however, are those as to the effectiveness of regulation as we have known it. Such questions are raised both as to the machinery of regulation and as to the manner in which that machinery has been operated.

This matter of regulation obviously is important in two aspects. One of these is the control of rates charged and service rendered to various types of consumers. A very difficult but equally important matter is the control of capital structures, of security markets and of all the complicated but necessary mechanism for attracting and wisely employing the capital required by a great and expanding industry.

The second of these regulatory functions has been in very considerable measure taken over by federal authority since the passage of the legislation of 1935. Even as to the first, that of rate regulation, the traditional reliance upon the authority of state or local regulatory bodies is seriously questioned both as to its effectiveness and as to its adaptation to the existing and future practical situation. It was believed by many that the development of the system in which operating properties were

combined, without regard to state boundaries, under centralized management of a top holding company had in itself a strong tendency to break down and defeat the purposes of state regulation. However this may be, the industry became, as to many of its characteristics, predominantly interstate in character. This situation has not been changed by the Holding Company legislation of 1935, which contemplates a rearrangement and more compact integration of units which in most cases will extend beyond the borders of any single state. Indeed, the normal unit of the future is almost certain to be an integrated regional system linked by interchange or equivalent agreements with its neighbors, and so set up as to be an efficient part of a national system. It must be large enough to permit the established economies of large-scale operation, and its operations will nearly always extend into the field in which for constitutional reasons only a federal regulatory body can effectively act. While the tendency towards such organization has certainly been accelerated by the Holding Company legislation and action taken under it, it is believed by many to be a natural and inevitable development apart from the influence of legislation.

Regional Organization

Indeed, the framers of the legislation of 1935 had such a development very much in mind. They directed both the Securities and Exchange Commission and the Federal Power Commission to make or continue surveys with a view to determining a nation-wide plan of organization of the industry which should produce geographically and economically integrated systems of such type and size as "having regard to the nature and character of the locality served can best promote and harmonize the interests of the public, the investor and the consumer."

The belief that some form of regional organization is the necessary future pattern of organization for the industry was also the opinion of many thoughtful utility executives. A widely circulated statement by Mr. Whiting, President of Commonwealth & Southern Corporation, dated April 10, 1941, is suggestive in this regard. Mr. Whiting was asking the Securities and Exchange Commission to stay its proceedings under Section 11 of the statute until it had complied with the mandate

of Section 30 to which reference has been made. The statement is not here referred to because of the persuasive argument made by Mr. Whiting to the effect that action by the SEC without such preliminary study is likely to produce disintegration and not integration. The point here important is the stress put by Mr. Whiting, with example and quotation, upon the degree to which "regional organization" has already developed in this industry, and the total lack of relation between a workable "power map" of the country and existing political subdivisions.

Interstate versus Local Controls

If it is true that economics and politics are combining to produce regional organization, it is apparent that increasingly large areas of public utility action will be interstate in character and beyond the scope of local regulation, even were such regulation more effective than it is believed by many to be. The limitations thus imposed upon the power of control of state bodies are likely adversely to affect such regulation as they can constitutionally assert, because of the complications of the problems dealt with by factors beyond the control of the regulating body.

The practical necessity of federal or regional regulation of a positive and effective character, with respect to certain features of rates and service, and of intersystem interchanges and relationships, seems apparent. In the field of investor protection and financial control, such necessity has seemingly passed beyond the point of argument, which has tended to shift to consideration of the manner of application of such control.

Recognition of the necessity for federal control of certain rates and practices of the new integrated units which it was contemplating in writing the legislation of 1935, led Congress to confer upon the Federal Power Commission authority to regulate interstate wholesale rates. This power has thus far been exercised rather sparingly but with increasing insistence by the Commission. Moreover, the Commission was given power, especially in times of national emergency, to order certain interconnections and to regulate interchange agreements (Section 202). Such a grant might very easily be made very effective in the wise coordination of our generating resources.

It follows that the tendency towards centralization of control in the federal government which, on the whole, has been characteristic of our whole political development, despite the protests of the party out of control at any given moment, is likely to be given further force as to the power industry, which has already been subjected to conspicuous examples of the operation of this tendency. This probability has serious implications both from the point of view of the public and from that of the industry itself.

In the first place, however "national" the industry becomes, there will remain a large and very important residuum of matters of strictly local significance. If both management and regulation become increasingly remote from the community, dangers arise which touch more nearly the special interests of the community than do the wider phenomena of centralization. It is important to keep a large measure of control of a service which enters nearly every household somewhere near the householder. Yet experience shows how easily such control slips away. The narrowing of the field of local control of railroads furnishes a suggestive example.

It was said above that the arising of a general public demand that government itself take over the whole field of electric power, either as the purveyor or as the regulator thereof, does not seem likely. Such a demand, however, is far from impossible; and if regulation is eventually believed to have failed, it may follow. The reasons which exist for thinking that the effect of wartime experience with public regimentation may render the public mind more receptive to such a proposal have already been indicated. Even if regulation is not felt wholly to have failed, the very increase in centralization of control essential to its relative success may excite or increase a public demand that government go the whole way and do the whole job.

Reorganization to Implement Regulation

Those who believe that this would be unwise would, it seems, do well to give thought to devising, and support to implementing, a system of regulation which will best reconcile the apparent necessity for increased federal or regional regulatory action with retention of the maximum of local control.

To this end, one suggestion may be offered with a full realization of the very great difficulty involved in working it out. It is to simplify the whole problem by a structural division of the industry.

In many, perhaps in most, major divisions of business activity the functions of production and distribution are separated. In this field they are usually combined. The operating company generates, transmits and distributes the energy to the smallest outlet. The reason is in part historical, and the fact that the industry is in such great measure so completely organized in this manner obviously makes any radical alteration bristle with financial, legal and other difficulties which discourage even the thought of change. That the combination of functions is not inevitable, however, is shown by the fact that an increasing number of distribution systems, usually municipally-owned, are already divorced from the generating unit.

A notable example is of course that of the TVA, but there are many communities which buy electricity at wholesale for local distribution. The interconnection of great generating systems is really another example; for while the usual form is an interchange agreement, the fact remains that the energy interchanged is distributed to the consumer by an organization which did not produce it. The British Grid system and Canadian Hydro are major examples of the economic possibility of the division of the field, though in a form somewhat different from that here to be suggested.

Such a division of function would greatly simplify the problem of regulation. Let us suppose that generation and long-distance transmission became, either separately or combined, the function of one group of units, and that from the selected substations another group, separated in organization though not necessarily in ultimate ownership, took over. It is apparent that many, if not most, of the matters of purely local concern which are the desirable province of a local regulatory body are now set apart from the great and doubtful fields in which the exercise of federal authority is indicated as necessary.

Not only is the field of regulation better circumscribed and in considerable measure defined, but the whole mechanics of regulation is made more easy. If valuation formulas are still to bedevil commissions and courts, at least the degree of bedevilment will be lessened. The

place and function of the state commission is definitely preserved and its task lightened and made more commensurate with its limited appropriation and its no less compelling limits of physical strength, which often fall short of its will to deal with the burdens cast upon it.

That so far-reaching a suggestion presents great difficulties of accomplishment is manifest. Both study and effort are necessary to make it practicable. It may well be impossible of realization under the stress of wartime conditions. What has been said as to the possible wisdom of postponing reorganization under the Holding Company Act may apply with double force to imposing such a further element of reorganization upon the utilities. But the problem might well be studied along with the greater one of nation-wide integration.

In short, the suggestion is offered for consideration in the belief that it is not impossible of realization and that it offers real promise for the orderly and satisfactory working out of the future of this industry.

How Efficient Is Regulation?

Leaving on one side this possibility of simplifying the difficulties of regulation, and assuming that the problem is one of adapting regulation to an industry organized along the lines indicated by present trends, there is need for frank and thoroughgoing reappraisal of the existing system of regulation and of its efficiency. Since the principal agency of regulation has been the state commission, consideration may first be directed to the current operation of control by this method. In what follows there is no attempt to distinguish between the more and the less effective commissions or to single out any for criticism or praise. It is believed that what is said applies in greater or lesser degree to all, since it relates to matters which are inherent in the device.

Already note has been taken of the obstacle to effective regulation which grows out of the fact that many utility operations are, because of their interstate character, beyond the effective scope of control of any given state commission. This obstacle grows out of the nature of our dual system of government and the development of the industry without regard to somewhat accidental political subdivisions. The individual state can do little or nothing about it.

There are, however, in the opinion of many critics, serious reasons for dissatisfaction with the results of state regulation even within the area in which it can, in theory, be effective. Some of these reasons are indicated in the research report. They are not all inherent in the system. Commissions do not have to be underpaid and understaffed. Their personnel does not have to be selected for political reasons or to represent less than the best available capacity for the job. They do not have to be asked to assume burdens so numerous and diversified that, with the best will in the world, they cannot be effectively borne. These are phenomena related to a weakness of the democratic system. They are not automatically cured by substituting federal for state control. They can be corrected when and if the public insists that they be corrected.

"Value" in Relation to Rate Cases

Certain obstacles to effective regulation, however, are inherent in the system as it has developed. When a conflict arises as to the propriety of an existing or proposed schedule of rates, the traditional resort is to a "rate case." This is a method having little to commend it except to members of the legal and engineering professions. It requires competent preparation and presentation, the assembling and interpretation of statistics, the cross-examination of witnesses — all the circumstance, if not all the pomp, of major litigation. Its principal feature usually has been an attempt at "valuation" of great and tremendously complicated properties. This expensive work was assumed to be required by the decision, in 1898, of *Smyth v. Ames* (169 U.S. 466).

This famous decision has been the subject of many learned pages by courts and commentators explaining, criticizing, applying, expanding, repudiating and defending its content. No adequate examination of this material can here be made. Nor is it really necessary for the present purpose. It may, however, be helpful to the reader who has had no occasion to follow the intricacies of the judicial history of rate regulation since *Munn v. Illinois* (94 U.S. 113 [1877]), to say that in *Smyth v. Ames* the rule was announced that a public utility was constitutionally entitled to "a fair return upon the value of that which it employs for the public convenience."

It is, however, apparent that if the word "value" be given its obvious meaning, commissions would be powerless to reduce rates so long as the reduction would adversely affect the company's earning power, however exorbitant that earning power might be. This is because the value of property depends on its future earnings as estimated by investors and speculators.

The Supreme Court was, however, not willing to deny the power to require rate reductions, at least in extreme cases. Accordingly, in *Smyth v. Ames* it stated a method for ascertaining "value" which was not directly dependent upon earnings. This was to give "such weight as may be just and right in each case" to several enumerated factors which have nothing to do with earnings.⁵ As the doctrine came later to be applied, the principal one of these was *replacement cost*, which in theory would be the same whether the property earned much or little. It has been pointed out by critics of this method that *value*, thus defined and ascertained, would remain unimpaired no matter what happened to rates. Consequently, the assumed constitutional prohibition against impairment of "value" by determinations lowering rates became logically inapplicable.

Perhaps because of this logical difficulty, the court has never made entirely clear just what it meant by the "value" upon which a fair return is to be allowed. But it has been universally assumed by courts and commissions that its ascertainment included the determination of the purely hypothetical figures of the cost of replacing the plant at the time of the inquiry. Of this process, Mr. Justice Stone, dissenting in *West v. Telephone Co.* (295 U.S. 662, 689), remarked:

In assuming the task of determining judicially the present fair replacement value of the vast properties of public utilities, courts have been projected into the most speculative undertaking imposed upon them in the entire history of English jurisprudence.

Nevertheless, an attempt at "valuation" and at the determination of replacement cost became the outstanding feature of a "rate case" as ordinarily conducted.

5. To be sure, the dictum in *Smyth v. Ames* mentioned, as among the items for consideration, "the amount and market value" of the company's stocks and bonds,

The conduct of a rate case is usually well done on the part of the utility which expects to shift the cost to the consumer. On the side of the public there is a different situation. If the job is left to the consumer or even to an affected municipality, it is often very inadequately done. If seriously undertaken by the commission itself, the commission is exposed to the familiar charge of combining the functions of prosecutor and judge, and undergoes a further and heavy burden upon its limited financial and human resources. Nor is the matter ended when and if the commission finally reaches a conclusion. There still may be, and often has been, an appeal to the courts and further extended litigation, which in many cases has been carried to the Supreme Court of the United States. In a spectacular case which, however, involved a telephone utility, the rate case was begun in 1921 and the final decision of the Supreme Court of the United States sustaining the Illinois commission was rendered in 1934 (*Lindheimer v. Ill. Bell Telephone Co.* [292 U.S. 150]). In more than one utility case the Supreme Court has commented upon the fact that the prediction reflected by the determination under review could already be corrected by experience accumulated while the case was pending.

It has already been suggested that the effect of a system in which this sort of thing is possible is beginning to change. At a time when the pressure was in the direction of lowering rates to keep pace with lowering costs of production, it was not unnatural for utility managements to look with favor on a process which permitted what the strategists call a delaying action. But the time may have come when increased flexibility of the rate-making process is of great importance to an industry faced by rising operating and tax costs. Certain utilities have resisted the efforts of some commissions and some legislatures to make possible prompt preliminary determinations, subject to later revision if the full development of the facts required. But this mechanism is equally well adapted to the granting of emergency increases if such prove necessary to the financial safety of the utilities. Its operation and extension are worthy of further study.

and "the probable earning capacity of the property under particular rates prescribed by statute" — items that are associated with earnings. In later opinions, however, the Supreme Court has declined to recognize these items as "elements of value."

The Pitfalls of Rate Formulas

At the very root of the wasteful and, it is submitted, unscientific traditional method of rate control lies the fact that it was predicated upon a formula which has the deceptive character of being easily and plainly stated and yet incapable of either plain or easy application. A public utility, it is said, is entitled to a fair return upon the *value* of the property used and useful in the public service. There is no element of this formula which lends itself to a quick and satisfactory conclusion. You must first determine, if you can, what property of the utility is in fact used or useful in the public service. You then must somehow get at its "value." At this point you find yourself in the embarrassment of choosing between, compromising or avoiding the conflicting theories of "reproduction cost less depreciation," "prudent investment," "original cost" and their variations.

Having arrived at some figure to adopt as "value," you are confronted with the question of a "fair return." Since you are deciding for the future, you are plunged at once into prediction in a world in which economic factors now change with dizzying rapidity. Your role as a prophet does not, however, end here. Having established to your own asserted satisfaction the amount of money which the company should be allowed to earn per annum, you still have to determine whether the rate schedule before you will yield that amount of money, or more or less. But this depends upon consumption, as to which the experience of the past may be no guide to the future, especially if you alter the rate schedule under which that experience was developed. So with a final despairing look at the huge "record" of the proceeding (some of which, at least, you have heard or read), and moved by the necessity of reaching some kind of conclusion, you reach one and proceed to write an opinion explaining or justifying it. This you do with a careful eye upon the last decision of the Supreme Court of the United States so that you may be sure to say that you have given careful consideration and proper weight to all the factors which it has said must be taken into account in your determination. You issue your order and wait with interest to see whether the company will appeal to the courts and in effect reopen the long round of controversy.

Rate Regulation by Negotiation

The impractical folly of this sort of thing is so manifest that both the utility companies and the commissions insist that the foregoing is merely the theoretical and the occasional method of rate making, and that in the great majority of cases rates are reduced or, it may be, raised as a result of informal friendly negotiations between the commission representing the consumers and the company management.

The research report indicates that this is indeed the case. The fact that it is the case indicates, however, that there is something fundamentally wrong with a system in which matters of such public moment are handled by public bodies in informal, and nearly always secret, conference with interested executives. This is especially true if it is said that the formal and public method is too expensive, too cumbersome and too slow to be ordinarily followed. It is very strongly suggestive that the principles followed in the "conference" method are probably the methods that ought to be followed frankly and openly in this whole matter of rate regulation — or at least that something ought to be substituted for what has been done.

Before considering what this substitution might be, it is well to look for a little at what is sought to be accomplished.

A public utility cannot exist and expand to meet the expanding need for its service without an adequate supply of capital. For this capital it must compete with other users of capital. It has a certain advantage in that it possesses a monopoly within a given territory of the supply of a vitally necessary service. It is at a certain disadvantage in that its income is subject to a degree of bureaucratic control which may be more severe than the control of competition in a nonregulated industry, and which has a definite lack of flexibility which prevents quick adaptation to changing conditions. This lack of flexibility has a real effect in making utility operators less inclined to experimentation with progressive policies, even with examples of the successful application of such policies (sometimes induced by threat of publicly-owned competition) before their eyes. It may also make real and serious difficulties for management and for investors when a development such as the recent and heavy increase of taxation comes to offset and perhaps reverse the trend towards lowered costs which has marked the last two decades.

The Aims of Regulation

It is plain that an electric utility must be allowed to charge rates which, after the deduction of operating expenses, including wholly adequate allowance for depreciation, obsolescence and the like, will leave it with net earnings sufficient to attract the capital which it needs. It does not need to earn more and should not be permitted so to do unless as a stimulant to obtaining outstanding performance in the interest of the public. The opinion of certain commissions that it is proper to allow additional earnings which may be "ploughed back" into the property is open to serious criticism. The result is to produce a definite "consumers' equity" in the property, i.e., the consumers have themselves contributed to the capital assets of the company by paying excessive rates.

The existence of this "consumers' equity" is recognized, but its value to the consumer is, under present conditions, largely unrealized. Indeed, where the "fair value" doctrine is really given strict recognition, it can never be realized. Under the decisions, once the excess rates have been collected, the money belongs to the company; and the property into which it may be converted is property "used and useful in the public service," to which the "fair value" doctrine applies. This has been recognized by the Supreme Court of the United States. In the *Lindheimer* case (292 U.S. 150) Chief Justice Hughes remarked:

But if the amounts charged to operating expenses and credited to the account for depreciation reserves are excessive, to that extent [consumers] are required to provide in effect capital contributions, not to make good losses incurred by the utility in the service rendered and thus to keep its investment unimpaired, but to secure additional plant and equipment upon which the utility expects a return.

As against the need of the company to have net earnings sufficient to attract the capital which it needs, the public is entitled to have the lowest rates which, under efficient management, will permit such earnings. It is entitled to insist not only upon efficiency but upon imagination. It has a right to demand that management explore fully the possibilities of maintaining earnings by lowering rates and encouraging higher load factors, and that account be taken of the demonstrated results of

such policies. It has a right, other things being equal, to have as low a rate as its neighbor in another city or region; and if things are not equal, it has a right to have that fact demonstrated. The public is not directly interested in what the company earns but it is vitally interested in what the consumer pays. Regulation of earnings is not synonymous with regulation of rates.

Suggested Procedure

If a commission approached the reconciliation of these needs and desires unhampered by formulas of any kind, it might well look primarily at the company's experience with a view to determining what the company's earnings had been, and at the prospective conditions of its market to estimate what its earnings were likely to be. It would consider experience of other companies in other not dissimilar market areas, not for the purpose of devising and applying a hard and fast "yardstick" criterion but for that of asking the company before it to justify a less favorable experience record. It would pay close attention to the apparent efficiency of the management. It would not ignore the sharp rate reductions which have marked the history of this industry during the past two decades, but it would appraise the effect in lowering costs of the tremendous technical advance which has been made in the electrical field and measure the reductions in rates against the reductions in cost. It would not ignore the impact of sharply increased taxation and the probabilities of further increases or reductions. It would seek to encourage hopeful experimentation by making it easier to repair the effect of over-optimistic ventures in the direction of lowering rates, by quickly restoring higher levels to whatever degree experience showed to be necessary. It would refuse to accept any hard and fast figure as that of a fair return, but it would explore the actual and prospective money market and find out what return actually was needed to attract capital.

In short, it would do the things which in fact are done, to greater or lesser extent, in the informal conferences to which reference has been made; but it would do them frankly and openly and with full publicity and opportunity to be heard to the consumers or communities affected. In so far as the matter lay within its jurisdiction, it would insist

that the capital structure and financial practices of the company be sound and fair to consumer and investor. In short, it would deal with the whole problem of regulation as a practical business question and not as an exercise in the application of stale and unprofitable formulas.

The public has no right to rates which deny to investors a reasonable return for the use of their capital. As was pointed out by Mr. Justice Brandeis in the *Southwestern Bell Telephone* case (262 U.S. 291), the true cost of the service rendered includes the necessary and proper cost of obtaining and using the capital which is risked. Indeed, the public cannot in the long run benefit at the expense of investors by refusing to allow to a utility the cost of service, either by depressing rates or increasing taxes. By destroying the value of the investor's interest, it will destroy its own necessary service.

But the public has a right to receive that service at a price which pays no undue rewards either to management or to capital. And it has a right to have its interest protected in the simplest, cheapest and most intelligent way that the situation permits.

Difficulties of Prudent Investment Doctrine

It is only a partial answer to the criticism made of the traditional contested rate case to have resort to what is called the "prudent investment doctrine," even though the effect of the recent decision in *Federal Power Commission v. Natural Gas Pipeline Co.* (315 U.S. 575) may be to make possible the application of that formula. To be sure, the use of the book figures of actual investment in the utility property as the basis for rate making tends to simplify somewhat the involved process which has been described. The Federal Power Commission, which has been more active in enforcing the jurisdiction over natural gas rates given it by the Natural Gas Act of 1938 than the similar jurisdiction over rates for electric power given it in 1935, believes that it has evolved a much more expeditious and effective method of rate regulation than that followed by other regulatory bodies.

There still, however, is required what may turn out to be a very extended and expensive investigation of the original cost of the property; and if the rule that the investment to be recognized as a basis for rates must have been "prudent" is literally adhered to, questions of great

difficulty will arise in its application. Moreover, since the application of the theory involves insistence upon the deduction from original costs of adequate allowance for depreciation, difficult questions will arise as to the adequacy and propriety of the company's practice with respect to depreciation and retirements. Further problems not easy of solution will arise as to the treatment of accumulated surplus, premiums paid in upon issues of capital stock and other like matters.

The Federal Power Commission in its 1940 report suggested that, by excluding evidence of reproduction cost and going value, it has been able to conclude certain of the cases before it in comparatively brief time. One reason, however, for the shortened period of actual hearings in some of these cases was the reliance by the Commission upon prima facie evidence accumulated in extended preliminary investigations. Moreover, the *Natural Gas Pipeline* case which, because of the recent decision of it by the Supreme Court, has attracted wide attention, was begun shortly after the passage of the Natural Gas Act in 1938. The Commission's order was made on July 23, 1940. The Supreme Court's decision sustaining the Commission came out on March 16, 1942. While this lapse of time compares favorably with the twelve years required by the *Lindheimer* case, it does not demonstrate that the expedition brought about by the Commission is other than relative.

In the *Natural Gas Pipeline* case, as is manifest from the decision (315 U.S. 575), the Commission did not exclude evidence of reproduction value. On the contrary, it accepted the company's valuation of its physical properties. It did this because of its intended resort to an interim order, upon a prima facie case, directing the filing of new schedules which would produce a fixed annual reduction of operating revenues. The case was held open for further proceedings.

The device of interim orders has been tried by other regulatory bodies, as has been mentioned above. It has usually been resisted by the utilities affected, and one of the significant features of the recent Supreme Court decision is that the power of the Commission to make such an order was sustained.

The Supreme Court versus Rate Formulas

The substance of what was said above as to the desirability of a new

approach to the mechanics of regulation was written before the decision of the *Natural Gas Pipeline* case. Analysis of the opinions suggests no reason for change in what has been said. It should be understood that while the court was unanimous in sustaining the order of the Commission, its reasons for so doing were expressed in two opinions — to which a brief expression of concurrence in the majority opinion was added by Mr. Justice Frankfurter. In one of these opinions, three justices — Black, Douglas and Murphy — joined. It is in this opinion that there is specific reference to “laying the ghost” of *Smyth v. Ames* (169 U.S. 466), from which the so-called “reproduction cost” theory so largely stems. It is in this opinion also that it is said that, as these judges construe the majority’s opinion, a commission is free to refuse to hear evidence upon reproduction value and to adhere to the “prudent investment formula,” rejecting all others. This opinion contains the following observation upon the recent history of utility regulation:

The havoc raised by insistence upon reproduction cost is now a matter of historical record. Mr. Justice Brandeis in the *Southwestern Bell Telephone Co.* case demonstrated how the rule of *Smyth v. Ames* has seriously impaired the power of rate regulation and how the “fair value” rule has proved to be unworkable by reason of the time required to make the valuations, the heavy expense involved and the unreliability of the results obtained.

Nevertheless, the minority does not suggest that adoption of the “prudent investment” theory is imposed upon regulatory bodies. Having said that a rate which permits the company to operate successfully and to attract capital is a just and reasonable rate, the minority concludes:

The decision in each case must turn upon considerations of justness and fairness which cannot be cast into a legalistic formula.

This is said, also, in the opinion of Chief Justice Stone, which is the opinion of the court. No specific allusion is made to the “prudent investment” theory, and “reproduction cost” is not discussed further than to remark that the Commission accepted the company’s estimate as to the reproduction value of its physical properties. But the court makes

the following declaration which will not come as a surprise to those who have studied, without preconceptions, *Smyth v. Ames* and its successor cases:

The constitution does not bind rate-making bodies to the service of any single formula or combination of formulas.

To this it added:

Agencies . . . are free within the ambit of their statutory authority to make the pragmatic adjustments which may be called for by particular circumstances.

It follows that the whole court agreed that regulatory bodies are free to approach the problem of rate making in a manner consonant with common sense.

This, again, should have been no surprise to students of the matter. A previous decision of the Supreme Court had pointed the way to this result. In the *Lindheimer* case above cited, the court came very near to dealing with a rate matter in the way previously suggested. To be sure its approach was negative rather than positive. The Illinois Commission had determined that the rates of the Illinois Bell Telephone Company should properly be lowered. The matter was taken to the courts and the lower federal courts disapproved the Commission's action as confiscatory. The assertion of confiscation was predicated upon the valuation which the courts placed upon the property.

The Supreme Court remarked that the rates in force when the case came before it were those in force when the controversy began. It then looked at the "valuation" based on the reproduction cost theory which the lower courts had assigned to the property, and observed that if that was indeed the value upon which the company was entitled to a fair return, not only the new rates prescribed by the Commission but the old rates were confiscatory. It then very sensibly looked at the company's earnings during the long period during which the case had been dragging its weary way through Commission and courts. Having done so, it found that they had been very handsome indeed. The Court, by Chief Justice Hughes, then disposed of the case by saying:

This actual experience of the company is more convincing than tabulations of estimates . . . Elaborate calculations which are at war with realities are of no avail. The glaring incongruity between the effect of the findings below and the actual results of the company's business makes it impossible to accept these findings as a basis of decision.

It is precisely this type of approach, unhampered by any formula,⁶ which is suggested for consideration as one calculated to produce speed, fairness and a minimum of expense and delay. Very plainly these results are in the interest of investor and consumer alike. Neither of them is served by conclusions which are at war with realities. What has been written is not a detailed blueprint of a technique of regulation. It is hoped that it is a sketch from which, with thought and effort, this important process of government may be made to conform to the practical necessities of our time.

4. THE ROLE OF THE FEDERAL GOVERNMENT

Improvement in the technique of rate regulation will, however, not end the difficulty which arises from the growth of the industry and its progressive organization in units which transcend existing political boundaries. If the suggestion of a division of function between generation and long-distance transmission, on the one hand, and local distribution, on the other, should be deemed impracticable, some method of dealing with the obstacle to effective regulation must be devised.

The delegation to the Federal Power Commission of authority to regulate interstate wholesale rates was a recognition of the existence of a major field of utility activity which was unregulated by any agency. That delegation filled the gap; but it did not put an end to the difficulty which results from the fact that the state authorities cannot have

6. While I agree with the general spirit of this section of the Committee Report, I nevertheless think the report exaggerates the opportunities of successful escape from the use of "any formula," as a basis of administrative rate control. Some fairly definite standard or criterion of reasonable rates seems almost imperative. The problem faced by the courts in deciding whether or not a prescribed rate schedule is unconstitutional is not quite the same as the problem faced by a commission in prescribing rates that are not only constitutional but "reasonable." — JAMES C. BONBRIGHT

jurisdiction coextensive with many of their problems, and are handicapped in what they do attempt by the complexities resulting from this fact, as well as by the size and extent of the units to which they seek to apply regulatory control.

An example of these complexities may be suggested. If an operating company subject to local regulation buys all or part of its power from a source not subject to local regulation, plainly a major factor in the local company's cost of operation is beyond the control of the local regulatory body. Yet it is there and must be recognized. The reports of the Federal Power Commission reflect very directly some of the consequences of this situation, and the Commission has remarked (Report, 1940, p. 61) that many of its major rate cases have been initiated as the result of complaint by state commissions or by municipalities "seeking to close the loophole through which companies engaged in interstate sales were escaping regulation." Moreover, as illustrative of the difficulty where jurisdiction is limited, the Commission has remarked that frequently it has been found that adjudication of a controversy arising with respect to particular rates, or rates in particular areas, has involved all the rates and operations of the company, a result to be expected in view of the interrelation of system operations and the fact that alteration of one factor of the general relationship must to greater or lesser extent affect all the others.

To give proper representation to the local interests involved in such determinations, the Federal Power Commission has encouraged intervention in proceedings before it by state commissions and has to some extent engaged in joint hearings with one or more state commissions affected.

The device of joint hearings is plainly a step toward a solution of the problem of local participation in dealing with what may be called local features of an interstate problem, and its technique may well be studied and worked out in greater detail.

Dangers of Excessive Centralization

Even if this technique were as perfect as the conditions permit, it still would not remove the final objection to entrusting the matter of regulation to a single federal body. That objection is the obvious one

to attempting to center in one body, control of all the infinite complexities of a nation-wide organization of utilities of this character. This objection to overcentralization is apart from the recurrent controversy with respect to "states' rights," which is as old as the nation itself. There may be ground for the fear that, despite the present attitude of seeking cooperation on the part of the states, the federal agencies will gradually occupy the field and push the state commissions into the background. The doubt here expressed is not predicated upon political theory but upon practical considerations of size and complexity, and upon the obvious disadvantage of depriving the community of control of essentially local affairs. There have been many who have believed that the extended power and multiple duties centered in the Interstate Commerce Commission, even with its enlarged size and divisional organization, are too great for efficiency. Yet the problem of the railroads is much simpler in many respects than that of the electric utilities.

Regional Regulation

By way of meeting these difficulties, the suggestion has been made that regulation be organized, as the industry itself seems likely to be organized, upon a regional basis; and that regulation be committed to regional authorities representing the state and federal governments, with the establishment of an over-all policy-making and supervisory body which would be relieved of the detail of direct regulation. In one form and another, regional organization is developing in many branches of governmental activity, although usually thus far the regional organization is rather a branch office of the central authority than a quasi-autonomous and independently functioning body. Nevertheless, the process of regional organization has gone far enough to furnish suggestive models upon which to devise a plan for this industry. As ordinarily the regions would be larger than a single state — indeed, it is this fact which produces the problem — and as the cooperation of the state commissions would seem to be a prime necessity, such cooperation would have to be arranged.

Without going into the intricate question of how far the federal power can be extended under the commerce clause to matters, say of local distribution, which would seem of primary state concern, it is

conceivable that the regional organization might be a federal organization with designation of representatives of the state commissions as federal officers — a procedure for which precedent seems to be in the making in connection with various wartime activities. It is not likely, however, that such a solution of the matter would satisfy the *amour propre* of the states or of their commissioners, which is likely to be exceedingly touchy in this kind of thing. It may be that the problem could be solved by resort to the principle of interstate compacts. It is easier to state the necessities of the case than to suggest a solution; but it is plain that the matter is one which deserves serious attention, especially in conjunction with the thought of divorcing the function of generation and transmission from that of distribution. The former is primarily regional and the latter is pre-eminently local.

Clarification of Power Commissions' Jurisdictions

One curious feature of the utility legislation of 1935 is the overlapping of authority granted to the Federal Power Commission and to the Securities and Exchange Commission. Later in this report some further consideration will be given to the latter commission, as to which a tentative suggestion has already been made. Here it is enough to note that both commissions were charged, as has been pointed out, with the duty of working out a sensible "power map" of the country; both have powers which to some extent supplement, and to some extent overlap, each other with respect to financial practices and capital structures; both are concerned, though in somewhat different ways, with such matters as depreciation accounting practices. Yet the Securities and Exchange Commission, which is busy regrouping the utilities of the country and revamping their capital structures largely upon estimates of future earnings, is totally without any control, present or prospective, of the rates upon which those future earnings primarily depend. It cannot in any direct way influence the policies of the authorities who do control this factor, a circumstance which may in practice make the forecasts of the Securities and Exchange Commission look exceedingly silly.

On the other hand, the Federal Power Commission has very far-reaching authority with respect to interstate rates. Yet the economic pattern of the industry, which in this respect it is to regulate, in large

part is being made for it by a body over whose theory and practice it is in turn without control. Meantime, those utilities whose activities bring them within the orbit of the Federal Power Commission are responsible to two federal bodies with respect to matters which at the very least are related. It does not seem as if the situation were either logical or desirable. Restudy of the whole matter of federal utility regulation in the light of experience since 1935 is desirable, with a view to devising an improved federal power statute which will avoid the defects and strengthen the weaknesses of the existing mechanism.⁷

Need for a Coordinated National Power System

Consideration of the functions of the Federal Power Commission — now expanded far beyond its original purpose of licensing the use of water power within the scope of public advantage — should not be left without a further word about its relation to the development of a power system coordinated upon national lines. Still assuming that the vertically integrated system, reaching from the generating station to the domestic and industrial consumer, is to be the ordinary form of organization, but that the purpose of regrouping operating companies into such systems of geographical contiguity and moderate though adequate size is to be carried out, it seems clear that the national system of which these new units are to be independent components must be predicated upon the most complete interconnection and interrelation which it is practicable to bring about. It is unnecessary here to go into detail as to the advantages of such interconnection in the reduction of reserve capacity possible to combined operations, the spreading of peak demands, the most efficient combination of steam and hydroelectric systems, the location of new steam or Diesel plants at the most strategic points, etc. Into this coordinated national system must be fitted the great governmental experiments. Indeed, those like the TVA, which have for some time been established, already have interchange agreements with their most important neighbors.

7. Such a restudy should consider whether or not, in addition to the present provisions requiring the disintegration of holding company systems that are uneconomical, there should also be provisions providing for compulsory consolidation into systems found to be economical by the administrative commission, pursuant to standards of economy set forth in the Act. — JAMES C. BONBRIGHT

The Federal Power Commission, at least until its energies were to some extent diverted by the pressing needs of electric power for defense production, was engaged in the study and regional planning upon which both regional regulation in general and the development of regulated interchange agreements must necessarily be based if the best results are to be achieved. In this connection, it has given some attention to the question raised in this report as to separation of the functions of generation and distribution and has made some study of the possibilities of an independent transmission system. In its 1940 report the Commission, while commenting upon the very considerable development of interconnection and interchange agreements already achieved, remarked that with the improvements in long-distance transmission and the diminution of transmission loss, the areas of interconnection might well be considerably enlarged. Up to the present, the terms of interchange agreements, which in the main are devoted very largely to the utilization of surplus power, have been left to private bargaining. Perhaps this is entirely as it should be; but the public interest in the matter is so important, especially where a major source of power in a given region is a publicly-owned plant or system, that there is reason to consider whether this is not a matter over which government should exercise control. As has been said, the Federal Power Commission has been given such control, particularly in situations of emergency. The need for intelligently and fairly coordinated operation is a need of the coming days of peace as well as of the present trying time of war. It may well be that this control should be extended and made more fully operative.

5. THE SEC AND THE HOLDING COMPANY ACT

The wide scope of the power given the Securities and Exchange Commission over the electric utilities and the far-reaching consequences of the Commission's exercise of its authority, especially under existing conditions, are of great public importance.

In important respects, the power of the Commission as to the electric and gas utilities far exceeds that given it in other fields of its activity. By Section 11 of the Holding Company Act — the so-called "death

sentence provisions" — the Commission is charged with the formulation of broad policy and has very wide discretion as to its enforcement. In major respects, neither the limit of the Commission's authority nor its interpretation of the Act has yet been tested and defined by decisions of the Supreme Court, and there is apparently wide difference of opinion as to many such matters between counsel for the Commission and for the utilities.

The constitutionality of the geographical integration provisions of the Act (Section 11 [b] [1]) has been upheld by the Circuit Court of Appeals for the Second Circuit (*North American Company v. S.E.C.*, 133 F. [2d] 148). At the joint request of the company and of the Commission, the Supreme Court granted certiorari but the case has not yet been argued for lack of a qualified quorum of the Court. The constitutionality of the provisions of the Act requiring corporate simplification and equitable distribution of voting power (Section 11 [b] [2]) has been upheld in the Third Circuit (*Commonwealth & Southern Corporation v. S.E.C.*). Both this decision and one of the Court of Appeals for the District of Columbia have upheld the authority of the Commission to enter a so-called "one stock order," requiring recapitalization of a holding company on the basis of a single issue of common stock in order to accomplish "equitable distribution of voting power," one of the criteria of Section 11 (b) (2). Three District Court decisions have upheld sweeping Commission interpretations of its powers under Section 11 (b) (2). Two of these, *In re Community Power Company*, 37 F. Supp. 901, *In re Jacksonville Gas Company*, 46 F. Supp. 852, were not contested cases. The most recent decision was contested and directly involved the Commission's philosophy of valuation of utility equities for purposes of Section 11 proceedings (*United Light & Power Company v. S.E.C.*, July 30, 1943). Here it was apparently not seriously argued that the Commission lacked the power to direct liquidation of the subject company, but the Commissioners had themselves split four to one on the issue of how the assets should be valued. The court's decision sustained the majority of the Commission.

The Commission has entered another field and has held that it has power to pass upon the validity of unliquidated claims against holding companies, based upon transactions occurring prior to the passage of

the Act (*North American Light & Power Company*, Holding Company Act Release No. 4066; *In re New England Gas and Electric Association*, Holding Company Act Release No. 4124). The Commission's power under Section 11 (b) (2) to direct the dissolution of holding companies is challenged in a pending case in the First Circuit (*American Power & Light Company v. S.E.C.*; *Electric Power & Light Corporation v. S.E.C.*). Eventually, some of these cases may reach the Supreme Court, with the possibility that a decision of that court may require radical revision of the Commission's present practices, or limitation of the scope of its activities.

As matters now stand, the Commission is formulating and seeking to apply its policies under conditions which even in more normal times would involve a high degree of unpredictability and uncertainty. When there is added the circumstance that all this is going on under the disturbance of the war, it is not surprising that there has arisen in some quarters a demand that the Commission suspend its activities in the enforcement of Section 11 of the statute until the end of the war shall bring about a more stabilized economic situation.

Perhaps the most forcible reply is that the Commission regards itself as having a mandate to go forward with the enforcement of the statute and has no alternative but to do so. This was apparently the view of the Circuit Court of Appeals for the Second Circuit in the *North American* case noted above. This is a way of saying that if a suspension of enforcement activities is desirable, the appeal must be to Congress. This may be so. If the appeal is made to Congress, the general situation as to enforcement may well have attention.

a. SCOPE OF THE COMMISSION'S DISCRETION

If, however, it is assumed that the Commission must, unless otherwise directed, continue its enforcement of the statute and must not do violence to it in letter or spirit, it remains true that the Commission is given wide discretion as to the way in which it shall go about its task and has complete control of what it may think it well to say about its purposes and point of view. Manifestly, it may easily be ruinous to a holding company to compel it to divest itself of large blocks of securi-

ties in its subsidiaries in the open market or by private sales for cash at prices which existing conditions — including, in many cases, the threat of such a divestment order — have depressed far below the intrinsic long-range value of the property. The ruin will fall, not upon the evil-doers of the past, but upon the present holders of the parent companies' securities. Yet one declared purpose of the holding company legislation was to protect so far as possible those very investors.

The Commission, of course, is aware of this situation and has pointed out in recent decisions (*Commonwealth & Southern*, Release No. 3432; *North American Company*, Release No. 3405; *Middle West Corporation*, Release No. 3580), that it "*can* at the appropriate time *give consideration*" to an application for the allowance of a second year after that prescribed for compliance with a divestment order, and even after that "*can consider* these circumstances" in determining when to go to court to compel compliance with its order.

It does not seem overcritical to this Committee to remark that this is a very cautious way of putting it. Apparently, the Commission means to imply that it is not its intention so to act as to destroy or seriously impair such value as remains to holding company investors; but, if so, it is hard to see why it does not come right out and say so. The Commission should no doubt reserve to itself its authority to determine upon the facts of each case whether conditions do make compliance with a divestment order economically unwise; but a straightforward public reassurance of the kind implied in the Commission's recent pronouncements would, in the opinion of this Committee, be of substantial public benefit.

b. THE PROBLEM OF DIVESTMENT

The problem of divestment is comparatively easy of solution where the properties to be disposed of are large units, and where the rights of those entitled to share in distribution or the proceeds of sale are clearly defined. Thus the North American Company and the United Gas Improvement Company have recently distributed substantial holdings of subsidiary securities among their stockholders. General market conditions seem to have improved to a point where the National Power &

Light Company was able to dispose of a large block of stock of an operating subsidiary required to be disposed of by a divestment order, through offering the securities publicly.

A more difficult situation is that where relatively small operating units (particularly gas companies), representing substantial holding company investments not large enough for distribution in kind or for public offering, cannot be sold to private investors, at least under present conditions, except at distress prices. In some such cases solutions may be found in exchanges of properties between holding company systems. The Commission has recently approved one such transaction. In many instances, however, even this device will not be available and the impact of the Commission's discretion as to when it will seek court enforcement of its divestment orders will remain an overhanging threat.

The problem just indicated arises in aggravated form where a holding company has chosen the principal system which it desires to retain and wishes also to retain as an additional system a gas or electric property operated in combination with the principal system by common control worked out through one or more operating companies. The statute, in Section 11 (b) (1) (A), requires for such retention a showing that the "additional system cannot be operated as an independent system without the loss of substantial economies which can be secured by the retention . . ."

In cases involving Clause (A), the Commission has not indicated whether or not it will consider additional costs which may be imposed upon the operation of the retained "principal system" — and therefore upon its customers — if it cannot continue also to operate the "additional system." It would seem that this question deserves careful consideration. Except by negative inference, the Commission has also failed thus far to make clear its conception of the limits of economies which it will regard as "substantial," even when measured only by the increased cost of independent operation of the "additional system."

Moreover, the Commission has indicated a tendency to insist upon the desirability of "free and unrestrained" competition as between gas and electric service in a given area to the point of creating a heavy presumption against the retention of combined electric and gas operations.

It is not clear that Congress in the Holding Company Act attempted thus to solve one of the most controversial questions in the whole field of public utility economics.⁸

In view of the fact that the statutory language in question, which was added during the course of Congressional consideration of the Holding Company Act, has the obvious purpose of mitigating the effect upon investors and consumers of the single system limitation, it is strongly suggested that in its interpretation the preservation of flexibility and adaptability to specific situations, always so necessary to the effectiveness of the administrative process, is peculiarly important.

C. VALUES AND THE FUTURE

The problem of the right to share in distributions or under recapitalization plans is equally involved. The holding company legislation was, after all, intended to be remedial and not punitive. Certainly, it was not intended to punish the victims of the evils whose recurrence it was designed to prevent. In its first section the statute declares a purpose to protect investors in the securities of holding companies as well as in their subsidiaries. Nor did Congress single out any particular class of security holders — such as the owners of first mortgage bonds or preferred stocks of operating subsidiaries — for protection as against all others who have, perhaps unwisely, exposed their savings to the hazards of a public utility enterprise.

The Commission cannot, of course, create value where none is left

8. I believe that sound policy dictates the acceptance of a strong presumption against the retention of both electric and gas properties in the same utility system. Whether or not the Holding Company Act in its present form justifies the Commission in entertaining such a presumption is a question on which I venture no opinion.

— JAMES C. BONBRIGHT

Those urging the divorcement of gas and electric properties must not disregard the increase of cost to the community involved in requiring two instead of one overhead and corporate costs, the inevitable increase in so-called excess-profits taxes to be collected from customers when one field is more profitable than the other (as is usually the case), and the sacrifice of the advantage of allocating to each business an appropriate percentage of joint operating costs, such for instance as meter reading. The economic gain of competition between gas and electricity is open to question and in some places has already brought about the crippling or abandonment of gas service.

— SAMUEL FERGUSON

or ever existed, and give to stockholders of insolvent corporations value which is taken away from creditors. The Supreme Court has stated that a senior security holder, i.e., a bondholder or preferred stockholder, cannot be forced to surrender any of his rights without "full compensation." However, this does not necessarily entitle him to full payment in cash or securities presently marketable for the full amount of his claim. What he is entitled to is "value" which, as the circumstances require or permit, may be "by increased participation in assets, in earnings or in control." (See *Consolidated Rock Products v. duBois* [312 U.S. 510, 529].)

The propriety of a reorganization plan turns upon the valuation of the assets involved, the determination of the parties entitled to participate and the allocation of new securities among those so entitled. This, said the Supreme Court in the *Consolidated Rock* decision, is a matter of "informed discretion" of the tribunal charged with determining the matter. The question is not one of application of a legal formula but of a business judgment.

These considerations emphasize the importance of the valuation adopted, and suggest that it is not required of the Commission to work out plans under Section 11 (b) upon value predicated upon present conditions or today's market; but rather, that it is permissible and proper to take a long-range view which assumes that the present heavy burden of the war, with its concomitant disturbances and very heavy taxation, will not last forever and that the country will, within a measurable period, return to a peacetime economy. This is, if anything, an easier task in the utility field than in more volatile industries. If the Commission intends now to proceed with the formulation of plans of reorganization, it cannot in fairness to present and future investors in equity securities (stock as distinguished from bonds and other debt securities) adopt a pessimistic view about the future of the American business economy.

Such a view, it is true, tends to protect the senior security holder. It would seem, however, that money invested in common stock must be treated with scrupulous fairness as compared with senior investment so that equity investments will be encouraged in the future.

In working out relative values for purposes of immediately pro-

spective reorganizations, much turns upon the treatment of depreciation and taxes, particularly the excess-profits tax. The tax problem has been mentioned earlier. It is impracticable to enter here upon any adequate discussion of proper theories of depreciation accounting. It is, however, plain that where the problem is one of value dependent upon future net earnings — which, in turn, are directly affected by accruals for depreciation — these accruals cannot be dismissed from study merely if they appear to be “conservative” or to be in accordance with tax returns. Inquiry must be made and an informed judgment arrived at as to maintaining, diminishing or increasing the rate of accrual in the years to come.

Four comparatively recent decisions (*United Light and Power Company*, Holding Company Act Release No. 4215; *Puget Sound Power & Light Company*, Holding Company Act Release No. 4255; *Southern Colorado Power Company*, Holding Company Act Release No. 4501; *Virginia Public Service Company*, Holding Company Act Release No. 4618) may be considered to throw some light on the Commission's approach to the problem of valuation for recapitalization purposes. The majority opinions in these cases draw a distinction between Section 11 and the reorganization statutes (Chapter X and Section 77 of the Bankruptcy Act) upon the ground that claims of preferred stockholders need not be considered as matured, as would the claims of creditors in bankruptcy; that therefore less precision is required in the valuation process. Holders of existing common stock were in each case permitted participation in a new class of common to be shared with present preferred stockholders. In all of these decisions Commissioner Healy dissented upon the ground that the majority had departed from the “rule of strict priorities.” He suggested as the primary test of the right of common stockholders to participate, the capitalization of prospective gross income cast up against the total liquidating preferences of senior securities, including the preferred with accumulated dividends. In the first two cases mentioned, the Commission, after making an apparently liberal estimate of prospective earnings and admitting that capitalization of that figure at an appropriate rate would not show a value greater than the liquidating preference of the preferred stocks

plus dividend arrears, apparently based its allocation between the existing preferred and common stocks on the number of years which would seem to be required under the existing capital structure to pay off the dividend arrears. Neither of these cases involved depreciation or excess-profits tax problems. In the *Southern Colorado* and *Virginia* cases capitalization of prospective earnings was sidestepped as unnecessary to the valuation process for purposes of Section 11. As to taxes, the Commission expressed the view in the *Southern Colorado* case that postwar taxation probably would not return to the 1939 level (a 16½ per cent to 19 per cent effective rate for normal income and surtax and no excess-profits tax). The *Virginia* case presented problems both as to depreciation and as to taxes. The former, the opinion does not specifically purport to solve. As to the latter, the opinion states: "1941 earnings and 1941 income and excess-profits taxes present the most reasonable basis for a long range earnings estimate available at this time." Since tax rates in 1941 involved not only a 31 per cent effective rate for normal income and surtaxes, but also a 35 per cent to 60 per cent excess-profits tax, it would seem that the Commission has committed itself to the proposition either that excess-profits taxation at 1941 rates will continue indefinitely, or that the present 90 per cent rate or some higher rate will continue into the future for at least twenty years. Either conclusion would seem at least to be open to reasonable doubt.⁹

Apart from such considerations, the Commission does not seem to have adopted any consistent principle by which the number of years required to pay off the arrears, assuming realization of the prospective earnings figures found, can be related to its percentage allocations. Thus there is no indication that the standards of valuation for purposes of Section 11 proceedings have been clearly defined or have become even as predictable as those applied by reorganization courts.

Several decisions of the Commission have given much attention to what, in the current argot of those concerned with this type of thing, is

9. See, for instance, the address of Roswell Magill, former Undersecretary of the Treasury, before the Controllers Institute of America, September 22, 1943 (reprinted by the Tax Foundation). Professor Magill expects the postwar level of corporate taxation to include an income tax of from 25 to 40 per cent. He expects early complete repeal of the excess-profits tax.

called the "Deep Rock doctrine," because it proceeds from the decision of the Supreme Court in a case entitled *Taylor v. Standard Gas & Electric Corporation* (306 U.S. 307), involving the Deep Rock Oil Corporation. This doctrine may be stated in oversimplified form as follows: Where a holding company has dominated a subsidiary so that their financial relations were not at arm's length and, by reason of this domination, mismanagement of the subsidiary occurred, such as exploitation by excessive service charges and the like, a claim of the holding company against the subsidiary may, in a reorganization of the latter, be subordinated to the interests of parties other than the holding company. This doctrine is, not unnaturally, much in the minds of the Commission's staff. While the matter is too complicated for brief treatment, it may also be said that the application of the Deep Rock doctrine to constantly varying states of fact is far from being definitely worked out. It is wholly possible that a doctrine which is based upon considerations of fair treatment may be so applied as to serve as a justification for gross injustice to investors in holding company securities quite as innocent as any other investors in any part of a utility system and themselves quite as seriously exploited as the public holders of securities of a subsidiary.

A subordination issue was raised, but not decided, in the *Virginia Public Service Company* case above noted, as to a claim of the parent based on a substantial bond holding. The Commission directed, however, that the claim should be canceled, because the bonds had been acquired by the holding company in 1937 without Commission approval, in violation of the Act, and that the funds must therefore be considered a capital contribution to the operating company. The acquisition in question took place before the Supreme Court decision in the *Electric Bond & Share* case, in which the constitutionality of the registration provisions of the Act was upheld, at a time when the Commission had publicly announced (Holding Company Act Release No. 22): "The Commission does not intend to make any recommendation to or requests upon the Department of Justice for the institution of proceedings to enforce criminal liabilities under the Act." Here, a civil penalty has been imposed upon the investors in the holding company.

If many similar situations exist, this decision may have far-reaching consequences, in that the title of holding companies to some of their investments may be open to serious question.

What has been said as to depreciation and as to subordination is not said in attack upon the Commission's procedure and certainly not in criticism of the Holding Company Act either in purpose or necessary operation. It is, however, intended to point out that the far-reaching effect of what the Commission does under Section 11 (b) calls for the most careful consideration and analysis, and that nothing should be said or done by the Commission which may be construed to reflect a punitive disposition towards holding companies and their public security holders. This is especially true of a public body such as the Commission, which has reason to complain of an attitude of uncompromising opposition to its efforts on the part of some of those whose interests are affected.

In this connection the recent decision of the Supreme Court in *Chenery Corporation v. S.E.C.* (318 U.S. 80) may be of landmark significance. The facts of the case are not apposite here. Its importance is that the Commission had purported to rest its decision upon what it considered to be the settled law. The Supreme Court disagreed with the Commission as to what the law was. It pointed out, however, that the Commission was an expert body that might well determine, on the basis of its experience in the field, that the particular practice which it sought to penalize — the purchase of senior securities by corporate officers at depressed market prices pending recapitalization — was a deleterious one and that it could make a rule forbidding the practice or perhaps impose the penalty on the basis of specific findings indicating the detriment to investors or consumers because of what had occurred in the particular case. Mr. Justice Frankfurter's opinion is not easy to interpret, but it would seem to point the way for the Commission to free itself from any strict concept requiring it to behave as would a court, and thus to work out equitable compromise solutions in situations where strict adherence to the law might, in its opinion, work injustice. Thus far the Commission has not made clear its conception of the powers conceded to it by the Court.

d. SOURCES OF NEW FINANCE

The operating electric utilities of the United States need capital to meet the need for their service. In the past the holding company has been a major source through which new equity capital has been supplied to the operating companies. Whatever the weaknesses of this method, as to many operating utilities no satisfactory substitute has yet come into existence. Yet the parent company is itself subject to the threat of what the market currently interprets as a genuine "death sentence." As things stand, it finds the greatest difficulty persuading the investment market to provide it with capital; and, could it find it, faces at least two major deterrents from supplying it to the subsidiary. There are: (1) the possibility that it may be compelled to dispose of the very subsidiary which most needs its help; and (2) the danger that its existing investment in the subsidiary will be reduced in value by subordination or some other device to accomplish equitable distribution of voting power and to bring senior capitalization in line with Commission standards. It seems clearly desirable that if funds can be found for advancement to subsidiaries to help meet the present emergency, the Commission might well give its assurance that it will give such new money adequate protection; for example, against the claim that its advance merely tended to "sweeten" an actually nonexistent equity.

Where new equity capital is unobtainable or is not justified by existing conditions, and yet new money must be had, it seems clear that the pressure towards capital structures with a relatively rigid ratio of common stock to senior securities must, as the Commission in its more recent decisions seems to have recognized, be relaxed. If the new money is really needed and cannot otherwise be had, investment in senior securities, to whatever degree is shown to be needed, must be permitted, with such safeguards as to amortization or call as in the opinion of the Commission will bring the ratio to any desired level when, over a period of time, market conditions permit. In extreme cases, however, enforced reorganization of the company's existing capital structure should be considered as a preferable alternative to the grant of permission for further borrowing.

Indeed, flexibility as to every preconception is necessary if the administrative process is to be effective.

6. THE FUTURE OF FEDERAL POWER

The research report deals in very considerable detail with the great multiple-purpose projects of the national government and sets out the differences in organization and management which characterize them. It is perhaps too early to attempt an appraisal of the results of this effort, and it is probably useless to seek to pass judgment upon the controversies which have arisen in the past with regard to them.¹⁰

The TVA, which has been the center of the greatest controversies of all, appears to have entered upon a period of relative peace in which its organization can devote itself to the gigantic war needs of its territory and the developing peacetime requirements of its many-sided program, instead of to the polemics, in court and out, of controversy. It is, however, encouraging to observe that the quiet which reigns in Knoxville has come after settlement which at least was a negotiated peace with the Commonwealth & Southern Corporation, and after an arrangement with the Aluminum Company of America for joint operation of its privately-owned dams and power sites which was voluntary on both sides. Whether or not the TVA or the other projects can serve in any close degree as a "yardstick" of the rates of others, in view of the difficulty of cost allocation among the various phases of a multiple-purpose program, seems unimportant. That its low rates have not been without effect upon its neighbors, and that its policy of basing rates less upon existing demand than upon the demand which low rates may be expected to produce is meeting with apparent success, seem to be reasonably established. The demonstration of the very large volume of use obtainable at sufficiently low rate levels is an achievement which none will gainsay or dispute. It is this "yardstick" rather than the other to

10. While a final appraisal is, of course, impossible, I am convinced that the development of these multiple-purpose projects — notably, the projects of the Tennessee Valley Authority — was one of the greatest national achievements of the 1930's.
— JAMES C. BONBRIGHT

which the TVA can point with pride as a notable social contribution. As a matter of fact, no director or responsible TVA official has ever claimed TVA rates to be a yardstick by which other rates, public or private, may be judged as to reasonableness, but only that the operation has produced a yardstick of potential social usefulness far in excess of that generally developed.¹¹

Many questions remain to be solved both as to the TVA and as to the other great sources of electric power which the government has developed or is developing. It hardly can be denied, however, that these projects have produced desperately needed power for this emergency, which would probably not have been available had their development been left to private initiative. What the future of these experiments will be, only the future can determine; but as was said earlier in this report, it is unlikely that any of the ground which has been so expensively and painfully taken by the government in this field will be given up. If that is so, one major problem is the fitting of these governmental activities into the national pattern; and this, in turn, means the further working out of their relations with their privately-owned neighbors, a process which in some cases at least, has apparently been very satisfactorily begun.

7. THE UTILITIES AND THE PUBLIC

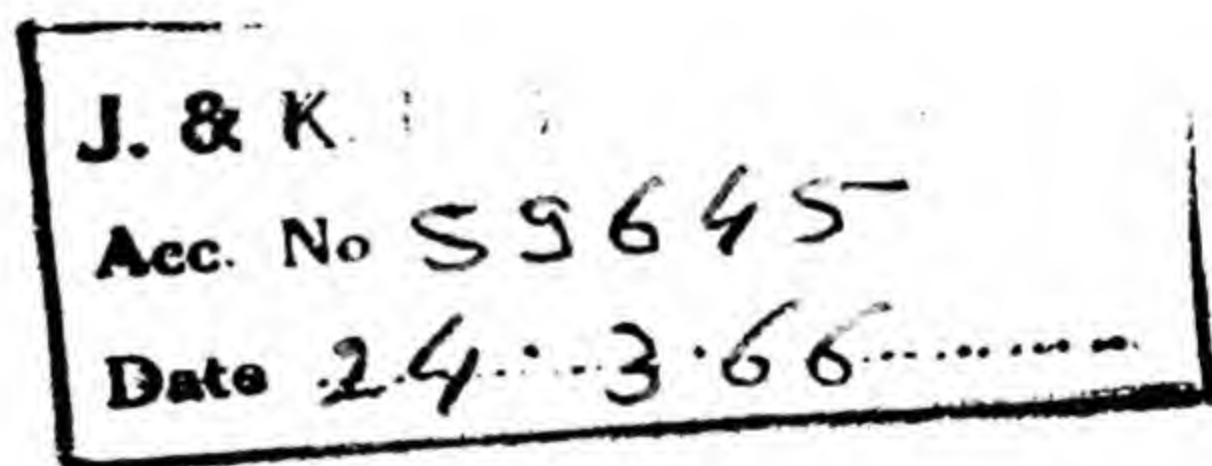
A reading of the research report will suggest to any reader how many questions of important bearing upon the future relation of government to this industry the Committee report leaves unanswered. But the final question is one which no committee can answer. That is the question as to the attitude which the public, of which government is only the organized representative, will take towards this great and vitally important business organization.

In part, that depends largely upon the industry itself, upon its will-

11. While I agree that TVA wholesale rates cannot qualify as yardstick rates, and while I agree that even the retail rates of the TVA distributors cannot be accepted as yardsticks without qualification, I am convinced that the ability of most of these distributors to earn an adequate revenue while charging these low rates creates a strong presumption that the far higher rates charged by most private companies are excessive. — JAMES C. BONBRIGHT

ingness to discipline itself, to avoid the repetition of the evils of the comparatively recent past, and the pitfalls which tremendous power resulting from the control of vast aggregations of capital places before the feet of the best-intentioned men. In part, it depends upon the devising of a system of regulation which will control without unduly hampering initiative, and will reward imagination and efficiency. And finally, it will depend upon the realization of the public that neither here nor elsewhere can it get something for nothing. It cannot get taxes which cripple the industry. It cannot get service without paying reasonably for it. It has a right to fair treatment and to the lowest rates which efficiently managed virtual monopoly can possibly give it. But it has no right to more.

J. HENRY SCATTERGOOD, *Chairman*
 JAMES C. BONBRIGHT
 LARUE BROWN
 SAMUEL FERGUSON
 MURRAY D. LINCOLN
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